TOSHIBA 3500
Portable Personal Computer
User's Manual

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TOSHIBA 3500 Portable Personal Computer User's Manual

First edition November 2002

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FCC information

Product Name : *Portégé 3500*

Model number : *PP350*

FCC notice "Declaration of Conformity Information"

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING: *Only peripherals complying with the FCC class B limits may be attached to this equipment. Operation with non-compliant peripherals or peripherals not recommended by TOSHIBA is likely to result in interference to radio and TV reception. Shielded cables must be used between the external devices and the computer's external monitor port, USB port and microphone jack. Changes or modifications made to this equipment, not expressly approved by TOSHIBA or parties authorized by TOSHIBA could void the user's authority to operate the equipment. The modular cable that comes with the computer must be used to connect a modem. Connect the end of the modular cable with the core to the computer.*

FCC conditions

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Contact

Address: TOSHIBA America Information Systems, Inc.
9740 Irvine Boulevard
Irvine, California 92618-1697

Telephone: (949) 583-3000

EU Declaration of Conformity

TOSHIBA declares, that the product: PP350* conforms to the following Standards:

Supplementary Information: "The product complies with the requirements of the Low Voltage Directive 73/23/EEC, the EMC Directive 89/336/EEC and/or the R&TTE Directive 1999/05/EEC."

This product is carrying the CE-Mark in accordance with the related European Directives. Responsible for CE-Marking is TOSHIBA Europe, Hammfelddamm 8, 41460 Neuss, Germany.

VCCI Class B Information

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

Modem warning notice

Conformity Statement

The equipment has been approved to [Commission Decision "CTR21"] for pan-European single terminal connection to the Public Switched Telephone Network (PSTN).

However, due to differences between the individual PSTNs provided in different countries/regions the approval does not, of itself, give an unconditional assurance of successful operation on every PSTN network termination point.

In the event of problems, you should contact your equipment supplier in the first instance.

Network Compatibility Statement

This product is designed to work with, and is compatible with the following networks. It has been tested to and found to conform with the additional requirements conditional in EG 201 121.

Germany	ATAAB AN005,AN006,AN007,AN009,AN010 and DE03,04,05,08,09,12,14,17
Greece	ATAAB AN005,AN006 and GR01,02,03,04
Portugal	ATAAB AN001,005,006,007,011 and P03,04,08,10
Spain	ATAAB AN005,007,012, and ES01
Switzerland	ATAAB AN002
All other countries/regions	ATAAB AN003,004

Specific switch settings or software setup are required for each network, please refer to the relevant sections of the user guide for more details.

The hookflash (timed break register recall) function is subject to separate national type approvals. It has not been tested for conformity to national type regulations, and no guarantee of successful operation of that specific function on specific national networks can be given.

Japan regulations

Region selection

If you are using the computer in Japan, technical regulations described in the Telecommunications Business Law require that you select the Japan region mode. It is illegal to use the modem in Japan with any other selection.

Redial

Up to two redial attempts can be made. If more than two redial attempts are made, the modem will return **Black Listed**. If you are experiencing problems with the Black Listed code, set the interval between redials at one minute or longer.

Japan's Telecommunications Business Law permits up to two redials on analogue telephones, but the redials must be made within a total of three minutes.

The internal modem is approved by Japan Approvals Institute for Telecommunications Equipment.

A00-0940JP

Pursuant to FCC CFR 47, Part 68:

When you are ready to install or use the modem, call your local telephone company and give them the following information:

- The telephone number of the line to which you will connect the modem
- The registration number that is located on the device

The FCC registration number of the modem will be found on either the device which is to be installed, or, if already installed, on the bottom of the computer outside of the main system label.

- The Ringer Equivalence Number (REN) of the modem, which can vary. For the REN of your modem, refer to your modem's label.

The modem connects to the telephone line by means of a standard jack called the USOC RJ11C.

Type of service

Your modem is designed to be used on standard-device telephone lines. Connection to telephone company-provided coin service (central office implemented systems) is prohibited. Connection to party lines service is subject to state tariffs. If you have any questions about your telephone line, such as how many pieces of equipment you can connect to it, the telephone company will provide this information upon request.

Telephone company procedures

The goal of the telephone company is to provide you with the best service it can. In order to do this, it may occasionally be necessary for them to make changes in their equipment, operations, or procedures. If these changes might affect your service or the operation of your equipment, the telephone company will give you notice in writing to allow you to make any changes necessary to maintain uninterrupted service.

If problems arise

If any of your telephone equipment is not operating properly, you should immediately remove it from your telephone line, as it may cause harm to the telephone network. If the telephone company notes a problem, they may temporarily discontinue service. When practical, they will notify you in advance of this disconnection. If advance notice is not feasible, you will be notified as soon as possible. When you are notified, you will be given the opportunity to correct the problem and informed of your right to file a complaint with the FCC. In the event repairs are ever needed on your modem, they should be performed by TOSHIBA Corporation or an authorized representative of TOSHIBA Corporation.

Disconnection

If you should ever decide to permanently disconnect your modem from its present line, please call the telephone company and let them know of this change.

Fax branding

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business, other entity or individual sending the message and the telephone number of the sending machine or such business, other entity or individual. In order to program this information into your fax modem, you should complete the setup of your fax software before sending messages.

Instructions for IC CS-03 certified equipment

1 The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection.

The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

> ***CAUTION:*** *Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.*

2 The user manual of analog equipment must contain the equipment's Ringer Equivalence Number (REN) and an explanation notice similar to the following:

The Ringer Equivalence Number (REN) of the modem, which can vary. For the REN of your modem, refer to your modem's label.

NOTICE: *The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.*

3 The standard connecting arrangement (telephone jack type) for this equipment is jack type(s): USOC RJ11C.

The IC registration number of the modem is shown below.

Canada: 1353 11026A

Notes for Users in Australia and New Zealand

Modem warning notice for Australia

Modems connected to the Australian telecoms network must have a valid Austel permit. This modem has been designed to specifically configure to ensure compliance with Austel standards when the country/region selection is set to Australia. The use of other country/region setting while the modem is attached to the Australian PSTN would result in you modem being operated in a non-compliant manner. To verify that the country/region is correctly set, enter the command ATI which displays the currently active setting.

To set the country/region permanently to Australia, enter the following command sequence:

```
AT%TE=1
ATS133=1
AT&F
AT&W
AT%TE=0
ATZ
```

Failure to set the modem to the Australia country/region setting as shown above will result in the modem being operated in a non-compliant manner. Consequently, there would be no permit in force for this equipment and the Telecoms Act 1991 prescribes a penalty of $12,000 for the connection of non-permitted equipment.

Notes for use of this device in New Zealand

- The grant of a Telepermit for a device in no way indicates Telecom acceptance of responsibility for the correct operation of that device under all operating conditions. In particular the higher speeds at which this modem is capable of operating depend on a specific network implementation which is only one of many ways of delivering high quality voice telephony to customers. Failure to operate should not be reported as a fault to Telecom.
- In addition to satisfactory line conditions a modem can only work properly if:

  a/ it is compatible with the modem at the other end of the call and

  b/ the application using the modem is compatible with the application at the other end of the call - e.g., accessing the Internet requires suitable software in addition to a modem.
- This equipment shall not be used in any manner which could constitute a nuisance to other Telecom customers.
- Some parameters required for compliance with Telecom's PTC Specifications are dependent on the equipment (PC) associated with this modem. The associated equipment shall be set to operate within the following limits for compliance with Telecom Specifications:

  a/ There shall be no more than 10 call attempts to the same number within any 30 minute period for any single manual call initiation, and

  b/ The equipment shall go on-hook for a period of not less than 30 seconds between the end of one attempt and the beginning of the next.

  c/ Automatic calls to different numbers shall be not less than 5 seconds apart.
- Immediately disconnect this equipment should it become physically damaged, and arrange for its disposal or repair.
- The correct settings for use with this modem in New Zealand are as follows:

  ATB0 (CCITT operation)

  AT&G2 (1800 Hz guard tone)

  AT&P1 (Decadic dialing make-break ratio=33%/67%)

  ATS0=0 (not auto answer)

  ATS10=less than 150 (loss of carrier to hangup delay, factory default of 15 recommended)

  ATS11=90 (DTMF dialing on/off duration=90 ms)

  ATX2 (Dial tone detect, but not (U.S.A.) call progress detect)

- When used in the Auto Answer mode, the S0 register must be set with a value of 3 or 4. This ensures:

  (a) a person calling your modem will hear a short burst of ringing before the modem answers. This confirms that the call has been successfully switched through the network.

  (b) caller identification information (which occurs between the first and second ring cadences) is not destroyed.

- The preferred method of dialing is to use DTMF tones (ATDT...) as this is faster and more reliable than pulse (decadic) dialing. If for some reason you must use decadic dialing, your communications program must be set up to record numbers using the following translation table as this modem does not implement the New Zealand "Reverse Dialing" standard.

  Number to be dialed: 0 1 2 3 4 5 6 7 8 9

  Number to program into computer: 0 9 8 7 6 5 4 3 2 1

  Note that where DTMF dialing is used, the numbers should be entered normally.

- The transmit level from this device is set at a fixed level and because of this there may be circumstances where the performance is less than optimal. Before reporting such occurrences as faults, please check the line with a standard Telepermitted telephone, and only report a fault if the phone performance is impaired.

- It is recommended that this equipment be disconnected from the Telecom line during electrical storms.

- When relocating the equipment, always disconnect the Telecom line connection before the power connection, and reconnect the power first.

- This equipment may not be compatible with Telecom Distinctive Alert cadences and services such as FaxAbility.

  NOTETHATFAULTCALLOUTSCAUSEDBYANYOFTHEABOVE CAUSESMAYINCURACHARGEFROMTELECOM

General conditions

As required by PTC 100, please ensure that this office is advised of any changes to the specifications of these products which might affect compliance with the relevant PTC Specifications.

The grant of this Telepermit is specific to the above products with the marketing description as stated on the Telepermit label artwork. The Telepermit may not be assigned to other parties or other products without Telecom approval.

A Telepermit artwork for each device is included from which you may prepare any number of Telepermit labels subject to the general instructions on format, size and colour on the attached sheet.

The Telepermit label must be displayed on the product at all times as proof to purchasers and service personnel that the product is able to be legitimately connected to the Telecom network.

The Telepermit label may also be shown on the packaging of the product and in the sales literature, as required in PTC 100.

The charge for a Telepermit assessment is $337.50. An additional charge of $337.50 is payable where an assessment is based on reports against non-Telecom New Zealand Specifications. $112.50 is charged for each variation when submitted at the same time as the original.

An invoice for $NZ1237.50 will be sent under separate cover.

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Glossary

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Preface

Congratulations on your purchase of the TOSHIBA 3500 computer. This powerful, lightweight notebook computer is designed to provide years of reliable, high-performance computing.

This manual tells how to set up and begin using your TOSHIBA 3500 computer. It also provides detailed information on configuring your computer, basic operations and care, using optional devices and troubleshooting.

If you are a new user of computers or if you're new to portable computing, first read over the *Introduction* and *The Grand Tour* chapters to familiarize yourself with the computer's features, components and accessory devices. Then read *Getting Started* for step-by-step instructions on setting up your computer.

If you are an experienced computer user, please continue reading the preface to learn how this manual is organized, then become acquainted with this manual by browsing through its pages. Be sure to look over the *Special features* section of the *Introduction*, to learn about features that are uncommon or unique to the computers and carefully read *HW Setup and Passwords*. If you are going to install PC cards or connect external devices such as a monitor, be sure to read Chapter 8, *Optional Devices.*

Manual contents

This manual is composed of nine chapters, nine appendixes, a glossary, and an index.

Chapter 1, *Introduction*, is an overview of the computer's features, capabilities, and options.

Chapter 2, *The Grand Tour*, identifies the components of the computer and briefly explains how they function.

Chapter 3, *Getting Started*, provides a quick overview of how to begin operating your computer in laptop mode and tablet mode and gives tips on safety and designing your work area.

Chapter 4, *Operating Basics*, includes instructions on using the following devices: Touch Pad (TOSHIBA tablet pen), external diskette drive, wireless communication features, LAN and internal modem.

Chapter 5, *The Keyboard*, describes special keyboard functions including the keypad overlay and hotkeys.

Chapter 6, *Power and Power-Up Modes,* gives details on the computer's power resources and battery save modes.

Chapter 7, *HW Setup and Passwords,* explains how to configure the computer using the HW Setup program. It also tells how to set a password.

Chapter 8, *Optional Devices*, describes the optional hardware available.

Chapter 9, *Troubleshooting*, provides helpful information on how to perform some diagnostic tests, and suggests courses of action if the computer doesn't seem to be working properly.

The Appendixes provide technical information about your computer.

The Glossary defines general computer terminology and includes a list of acronyms used in the text.

The Index quickly directs you to the information contained in this manual.

Conventions

This manual uses the following formats to describe, identify, and highlight terms and operating procedures.

Abbreviations

On first appearance, and whenever necessary for clarity, abbreviations are enclosed in parentheses following their definition. For example: Read Only Memory (ROM). Acronyms are also defined in the Glossary.

Icons

Icons identify ports, dials, and other parts of your computer. The indicator panel also uses icons to identify the components it is providing information on.

Keys

The keyboard keys are used in the text to describe many computer operations. A distinctive typeface identifies the key top symbols as they appear on the keyboard. For example, **Enter** identifies the Enter key.

Key operation

Some operations require you to simultaneously use two or more keys. We identify such operations by the key top symbols separated by a plus sign (+). For example, **Ctrl + C** means you must hold down **Ctrl** and at the same time press **C**. If three keys are used, hold down the first two and at the same time press the third.

ABC When procedures require an action such as clicking an icon or entering text, the icon's name or the text you are to type in is represented in the type face you see to the left.

Display

ABC Names of Windows® or icons or text generated by the computer that appears on its display screen is presented in the type face you see to the left.

Messages

Messages are used in this manual to bring important information to your attention. Each type of message is identified as shown below.

CAUTION: *Pay attention! A caution informs you that improper use of equipment or failure to follow instructions may cause data loss or damage your equipment.*

NOTE: *Please read. A note is a hint or advice that helps you make best use of your equipment.*

General Precautions

TOSHIBA computers are designed to optimize safety, minimize strain and withstand the rigors of portability. However, certain precautions should be observed to further reduce the risk of personal injury or damage to the computer.

Be certain to read the general precautions below and to note the cautions included in the text of the manual.

Stress injury

Carefully read the *Instruction Manual for Safety & Comfort*. It contains information on prevention of stress injuries to your hands and wrists than can be caused by extensive keyboard use. Chapter 3, *Getting Started*, also includes information on work space design, posture and lighting that can help reduce physical stress.

Heat injury

- The bottom side of the computer becomes hot when operated for a long time. If you feel uncomfortable with the heat, stop operating the computer and wait for cooling down.
  If you maintain physical contact with the computer for a long time (on your lap, or in your forearm in tablet mode, for example), your skin might suffer low temperature injury.
- If the computer has been used for a long time, avoid direct contact with the metal plate supporting the I/O ports. It can become hot.
- The surface of the AC adaptor can become hot when in use. This condition does not indicate a malfunction. If you need to transport the AC adaptor, disconnect it and let it cool before moving it.
- Do not lay the AC adaptor on a material that is sensitive to heat. The material could be damaged.

Pressure or impact damage

Do not apply heavy pressure to the computer or subject it to strong impact. Excessive pressure or impact can cause damage to computer components or otherwise cause malfunctions.

PC card overheating

Some PC cards can become hot with prolonged use. Overheating of a PC card can result in errors or instability in the PC card operation. Also be careful when you remove a PC card that has been used for a long time.

Chapter 1

Introduction

This chapter provides an equipment checklist, and it identifies the computer's features, options and accessories.

> ***CAUTION:*** *Some of the features described in this manual may not function properly if you use an operating system that was not preinstalled by TOSHIBA.*

Equipment checklist

Carefully unpack your computer. Save the box and packing materials for future use.

Check to make sure you have all the following items:

- ❑ PORTÉGÉ 3500 Portable Personal Computer
- ❑ Universal AC Adaptor and power cord
- ❑ TOSHIBA tablet pen (hereafter, the tablet pen)

> ***NOTE:*** *The tablet pen is included in the carton of pen set with the product when purchased. Spare pen tip and draw-out tool are also included in the carton.*

- ❑ Modular cable

Windows XP Tablet PC Edition

- ❑ The following software is preinstalled:
  - Microsoft® Windows XP Tablet PC Edition
  - TOSHIBA Modem driver
  - TOSHIBA Display driver
  - TOSHIBA Touch Pad driver
  - TOSHIBA Sound driver
  - TOSHIBA Bluetooth drivers (Can be used only in Bluetooth models)
  - TOSHIBA Wireless LAN Driver
  - TOSHIBA Software Modem Driver

- TOSHIBA SD card Driver
- TOSHIBA Utilities
- TOSHIBA Hotkey Utility for Display Devices
- TOSHIBA Power Saver
- TOSHIBA Common Modules
- TOSHIBA Console
- TOSHIBA Network Device Switch
- TOSHIBA Skins for Windows Media Player
- Online manual
- Sensiva Symbol Commander™

❑ Documentation:

- *PORTÉGÉ 3500 Portable Personal Computer User's Manual*
- Microsoft Windows XP Tablet PC Edition manual package
- *Instruction Manual for Safety & Comfort*
- End User License Agreement
- International Limited Warranty (ILW) Instruction
  (This instruction is included only with computers sold in ILW supported areas.)

❑ Product Recovery CD-ROM (contains TOSHIBA Management Console, which is not preinstalled)

Features

The computer uses TOSHIBA's advanced Large Scale Integration (LSI), Complementary Metal-Oxide Semiconductor (CMOS) technology extensively to provide compact size, minimum weight, low power usage, and high reliability. This computer incorporates the following features and benefits:

Processor

Built-in	Mobile Intel® Pentium® III processor 1.33 GHz - M with Enhanced Intel® SpeedStep™ Technology incorporates a math coprocessor and 32 KB cache.

Memory

Built-in	SDR memory modules are available in 128 or 256 or 512 MB. Memory modules can be installed in the two memory slots for a maximum of 1 GB system memory.
Expansion slot	The computer has two slots for Random Access Memory (RAM) cards. System memory up to 1 GB can be installed.
Level 2 cache	A 512 KB level 2 cache is provided to maximize performance.
Video RAM	Video display uses 16 MB of system memory as video RAM.

Disks

Internal hard disk	Available in four sizes. 20.0 billion bytes (18.63 GB) 30.0 billion bytes (27.94 GB) 40.0 billion bytes (37.25 GB) 60.0 billion bytes (55.88 GB)

Display

The computer's LCD panel supports high-resolution video graphics. The screen can be set at a wide range of viewing angles for maximum comfort and readability.

Built-in	12.1" XGA-TFT, 1024 horizontal x 768 vertical pixels, up to 16 M colors.
Graphics controller	A 128-bit graphics controller maximizes display performance. Refer to Appendix B for more information.

Keyboard

Built-in	84 keys or 85 keys, compatible with IBM enhanced keyboard, embedded numeric overlay, dedicated cursor control, and keys.

Touch pad

Built-in	A touch pad and control buttons in the palm rest enable control of the on-screen pointer and scrolling of windows.

TOSHIBA tablet pen

Supplied	A pen enables data entry directly through the display screen.

Power

Battery Pack	The computer is powered by one rechargeable lithium-ion Battery Pack.
RTC battery	The internal RTC battery backs up the Real Time Clock (RTC) and calendar.
AC adaptor	The universal AC adaptor provides power to the system and recharges the batteries when they are low. It comes with a detachable power cord. Because it is designed for universal use, it can operate in a range between 100 and 240 volts AC.

Ports

Headphone	Enables connection of a stereo headphones.
Microphone	Enables connection of a monaural microphone.
Infrared	This infrared port is compatible with Infrared Data Association (IrDA 1.1) Fast InfraRed (FIR) standards. It enables cableless 4 Mbps data transfer with IrDA 1.1 compatible external devices.

External monitor	15-pin, analog VGA port supports VESA DDC2B compatible functions.
Universal Serial Bus (USB 2.0)	The computer has two Universal Serial Bus ports that comply with the USB 2.0 standard, which enables data transfer speeds 40 times faster than USB 1.1 standard. (The ports also support USB 1.1.).

Slots

PC card	The PC card slot accommodates one 5 mm Type II card.
SD card	This slot lets you easily transfer data from devices, such as digital cameras and Personal Digital Assistants, that use SD card flash-memory. You can use memory module in this slot.
Compact Flash module	This slot accommodates Compact Flash module of various capacities. You cannot use Compact Flash module that does not conform to CFA specifications. You can also use Compact Flash I/O module other than memory module.

Multimedia

Sound System	Windows Sound System compatible sound system is provided with internal speaker as well as jacks for an external microphone and headphone.

Communications

Modem	An internal modem provides capability for data and fax communication. It supports V.90 (V.92). Refer to Appendix E. The speed of data transfer and fax depends on analog telephone line conditions. It has a modem jack for connecting to a telephone line. It is preinstalled as a standard device in some markets. Both of V.90 and V.92 are supported only in USA and Canada. Only V.90 is available in other regions.

LAN	The computer is equipped with a LAN card that supports Ethernet LAN (10 Mbit/s, 10BASE-T) and Fast Ethernet LAN (100 Mbit/s, 100BASE-Tx).
Wireless LAN	In some markets, the computer is equipped with a Wireless LAN mini-PCI card that is compatible with other LAN systems based on Direct Sequence Spread Spectrum radio technology that complies with the IEEE 802.11 Standard (Revision B). It supports data transfer up to 11 Mbit/s. It has Frequency Channel Selection (2.4 GHz) and allows roaming over multiple channels. This description is applicable to the model equipped with wireless LAN function.
Bluetooth	Circuits supporting Bluetooth communications standards enable wireless connection to compatible devices. This description is applicable to the model equipped with Bluetooth function.

Security

Security lock slot	Connects an optional security lock to anchor the computer to a desk or other large object

Software

Operating System	One of the following operating systems are Windows XP Tablet PC Edition. Refer to the preinstalled software section at the front of this chapter.
TOSHIBA Utilities	A number of utilities and drivers are preinstalled to make your computer more convenient to use. Refer to the *Utilities* section in this chapter.
Plug and Play	When you connect an external device to the computer or when you install a component, Plug and Play capability enables the system to recognize the connection and make the necessary configurations automatically.

Special features

The following features are either unique to TOSHIBA computers or are advanced features, which make the computer more convenient to use.

Hotkeys	Key combinations let you quickly modify the system configuration directly from the keyboard without running a system configuration program.
Keypad overlay	Gray keys with gray lettering make up the keypad overlay, which lets you use the keyboard for ten-key operations or cursor control.
Display automatic power off	This feature automatically cuts off power to the internal display when there is no keyboard input for a time specified. Power is restored when any key is pressed. You can specify the time in the *Turn off monitor* item of the *Power Save Mode* window in Power Saver.
HDD automatic power off	This feature automatically cuts off power to the hard disk drive when it is not accessed for a time specified. Power is restored when the hard disk is accessed. You can specify the time in the *Turn off hard disks* item of the *Power Save Mode* window in Power Saver.
System automatic power off	This feature automatically turns off power to the system when there is no input for a time specified. You can specify the time in the *System standby* or *System hibernate* item of the *System Power Mode* window in Power Saver.
Battery save mode	This feature lets you save battery power. You can specify the Power Save Mode in the *Running on batteries* item of the *Power Save Modes* window in Power Saver.
Power on password	Two levels of password security are available: supervisor and user. This feature prevents unauthorized access to your computer.

Instant security	A hotkey function blanks the screen and disables the computer providing quick and easy data security.
Panel power on/off	This feature turns power to the computer off when the display panel is closed and turns it back on when the panel is opened. You can specify the setting in the *When I close the lid* item of the *System Power Mode* window in Power Saver.
Auto power on	This feature lets you set a time and date for the computer to turn on automatically. The feature is useful for receiving remote communications while you are asleep or away. You can specify the setting in Scheduled Tasks.
Standby	If you have to interrupt your work, you can turn off the power without exiting from your software. Data is maintained in the computer's main memory. When you turn on the power again, you can continue working right where you left off.
Hibernation	This feature lets you turn off the power without exiting from your software. The contents of main memory is saved to the hard disk, when you turn on the power again, you can continue working right where you left off.
Heat dispersal	To protect from overheating, the CPU has an internal temperature sensor. If the computer's internal temperature rises to a certain level, the cooling fan is turned on or the processing speed is lowered. Use the *Fan* item of the *Power Save Modes* window in Power Saver.

Maximum Performance	Turns on fan first, then if necessary lowers CPU processing speed.
Performance	Uses a combination of fan and lowering the CPU processing speed.
Battery optimized	Lowers the CPU processing speed first, then if necessary turns on the fan.

Utilities

This section describes preinstalled utilities and tells how to start them. For details on operations, refer to each utility's online manual, help files or readme files.

TOSHIBA Power Saver	To access this power savings management program in Windows XP, open the Control Panel, click Performance and Maintenance and click the TOSHIBA Power Saver icon.
HW Setup	This program lets you customize your hardware settings according to the way you work with your computer and the peripherals you use. To start the utility in Windows XP, open the Control Panel, click Printers and Other Hardware and click the TOSHIBA HW Setup icon.
Fn-esse	This Windows program lets you define your own "short-cut" keys to quickly launch applications and speed your work in Windows. To start the utility, click the Windows Start button, point to All Programs, point to TOSHIBA Utilities and click Fn-esse.
Supervisor Password Utility for Windows	This utility for Windows lets you register a Supervisor Password, which restricts access to HW Setup.
Display Driver for Windows	The display driver enables simultaneous display on the internal LCD, and on an external computer monitor. To enable this function, use the Display Properties dialogue box.
Symbol Commander	This software enables the user to run an application or to show home page by drawing a simple mark on the display with the TOSHIBA tablet pen. You can customize the action to boot the computer and to run the application.

Sound drivers	A broad range of audio controls are possible through the ALi sound driver, including Software Synthesize, Mic volume and Power management. Click Control Panel and click the ALi sound setup icon to adjust power management settings. For other sound settings, use the Windows Device Manager, Multimedia panel or volume control dial.
TOSHIBA Accessibility	This utility lets you make the Fn key sticky, that is, you can press it once, release it, and they press an "F number" key. The Fn key remains active until another key is pressed.
Hotkey utility	This utility lets you display or hide a confirmation message when you press Fn + F3 or Fn + F4.
TOSHIBA Console	TOSHIBA Console is a graphical user interface that provides easy access to help and services. It is the default function launched by the TOSHIBA Console button.
Bluetooth TOSHIBA Stack	This software enables communication between remote Bluetooth devices. Refer to the Quick Start Guide.

NOTE: *Bluetooth cannot be used in models that do not have a Bluetooth module installed.*

Options

You can add a number of options to make your computer even more powerful and convenient to use. The following options are available:

Memory modules	Two memory expansion slots are available for installing 128, 256 or 512 MB memory modules. Use 144-pin, PC133 standard compatible SDR memory modules.
Battery Pack	A Battery Pack (PA3228U) can be purchased from your TOSHIBA dealer. The Battery Pack is identical to the one that came with your computer. Use it as a spare or replacement.
Universal AC Adaptor	If you use your computer at more than one site, it may be convenient to purchase an additional Universal AC Adaptor for each site so you will not have to carry the adaptor with you.
USB FDD Kit	A 3 1/2" diskette drive accommodates 1.44-megabyte or 720-kilobyte diskette. It connects to a USB port. (You cannot format 720-kilobyte diskettes on Windows XP, but you can use previously formatted disks.)
Battery Charger	The Battery Charger lets you charge spare batteries outside the computer.
Security lock	A slot is available to attach a security cable to the computer to deter theft.
Wireless LAN Kit	This option enables wireless LAN functions in computer that does not have preinstalled wireless LAN. It is installed by dealers only.
Bluetooth Kit	This option enables Bluetooth wireless communications in computer that does not have preinstalled Bluetooth. It is installed by dealers only.
TOSHIBA tablet pen	TOSHIBA tablet pen can be purchased from your TOSHIBA dealer. Use it as a spare to your computer. Spare pen tip and draw-out tool are included.
DVD-ROM Drive	DVD-ROM Drive (PA3246) is available as an optional external optical disk drive. You can buy the drive from TOSHIBA dealer.

The Grand Tour

This chapter identifies the various components of your computer. Become familiar with each component before you operate the computer.

Front with the display closed

Figure 2-1 shows the computer's front with its display panel in the closed position.

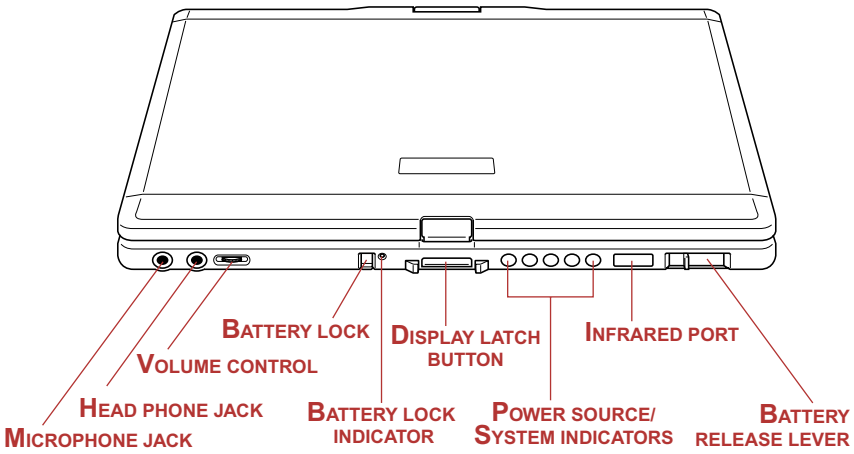


Figure 2-1 Front of the computer with the display closed

Microphone jack

A standard 3.5 mm (in dia.) mini microphone jack enables connection of a monaural microphone or other device for audio input.

Headphone jack

A standard 3.5 mm mini headphone jack enables connection of a stereo headphones (16 ohm minimum) or other device for audio output. When you connect headphones, the internal speaker is automatically disabled.

Volume control

Use this dial to adjust the volume of the speaker.

Battery lock

The battery lock prevents inadvertent release of the Battery Pack.

Battery lock indicator

This indicator shows the status of the Battery lock by color. The indicator shows red when the Battery lock is released.

Display latch button

The latch mechanism secures the LCD panel in its closed position. Push the Display latch button to release the latch to open the display.

Power source/ system indicators

LEDs let you monitor the status of various computer functions. Details are given in the *Indicators* section.

Infrared port

This infrared port is compatible with Infrared Data Association (IrDA 1.1) standards. It enables cableless 4 Mbps, 1.152 Mbps, 115.2 kbps, 57.6 kbps, 38.4 kbps, 19.2 kbps or 9.6 kbps data transfer with IrDA 1.1 compatible external devices.

Battery release lever

Releasing the battery lock and sliding the Battery release lever to the outside of the computer enables to remove the battery from the computer.

Left side

Figure 2-2 shows the computer's left side.

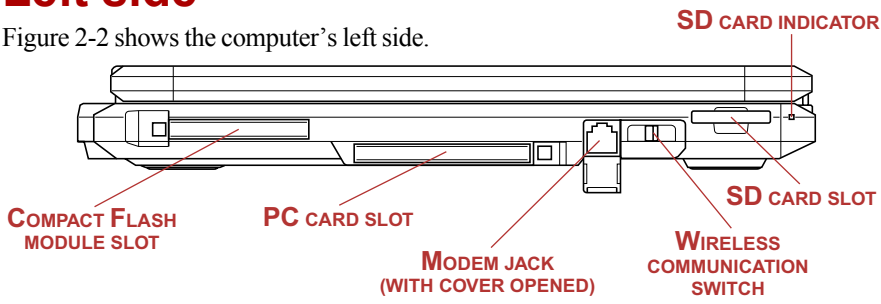


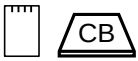
Figure 2-2 The left side of the computer

Compact Flash module slot

This slot accommodates Compact Flash module of various capacities. You cannot use Compact Flash module that does not conform to CFA specifications.
You can also use Compact Flash I/O module other than memory module.

CAUTION: *Keep foreign objects out of the Compact Flash module slot. A pin or similar object can damage the computer's circuitry.*

PC card slot



A PC card slot can accommodate one 5 mm PC card (Type II). The slot supports 16-bit PC cards and CardBus PC cards.

CAUTION: *Keep foreign objects out of the PC card slot. A pin or similar object can damage the computer's circuitry.*

Modem jack

In areas where an internal modem is installed as standard equipment, there is a modem jack that lets you use a modular cable to connect the modem directly to a telephone line. The modem is not supported in some marketing regions.

CAUTIONS: *1. In case of a lightning storm, unplug the modem cable from the telephone jack.*

2. Do not connect the modem to a digital telephone line. A digital line will damage the modem.

Wireless communication switch

Slide this switch to the right to turn on Bluetooth and wireless LAN. Slide it to the left to turn off the functions.

CAUTION: *Set the switch to off in airplanes and hospitals. Check the wireless communication indicator. It will stop glowing when the wireless communication function is off.*

SD card slot

This slot lets you transfer data from the device to your computer.

CAUTION: *Keep foreign objects out of the SD card slot. A pin or similar object can damage the computer's circuitry.*

SD card indicator

This indicator glows green when the computer is accessing the SD card slot.

Right side

Figure 2-3 shows the computer's right side.

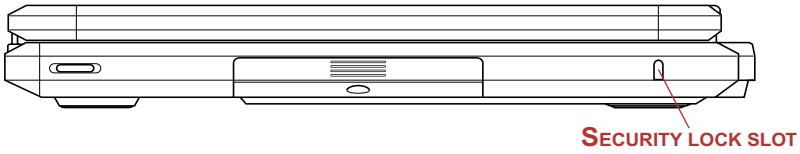


Figure 2-3 The right side of the computer

Security lock slot A security cable is attached to this slot. The optional security cable anchors your computer to a desk or other large object to deter theft.

Back side

Figure 2-4 shows the computer's back side.

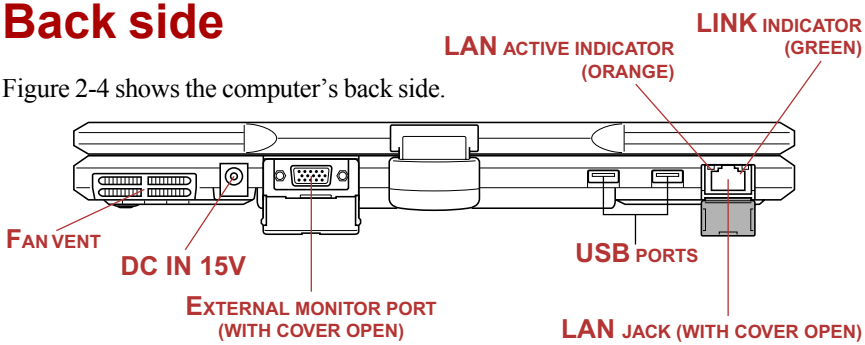


Figure 2-4 The computer's back side

Fan vent Provides air flow for the fan.

***CAUTION:** Be careful not to block the fan vent. Also be careful to keep foreign objects out of the vent. A pin or similar object can damage the computer's circuitry.*

DC IN 15V The AC adaptor is connected to this socket. Use only the model of AC adaptor that comes with the computer. Using the wrong adaptor can damage your computer.

DC IN 15V

External monitor port

This 15-pin port lets you connect an external monitor.

Universal Serial Bus (USB 2.0) port

Two Universal Serial Bus ports are on the back side. The ports comply with the USB 2.0 standard, which enables data transfer speeds 40 times faster than the USB 1.1 standard. (The ports also support USB 1.1.)

CAUTION: *Keep foreign objects out of the USB connectors. A pin or similar object can damage the computer's circuitry.*

LAN jack

This jack lets you connect to a LAN. The adaptor has built-in support for Ethernet LAN (10 megabits per second, 10BASE-T) and Fast Ethernet LAN (100 megabits per second, 100BASE-Tx).

LAN active indicator (orange)

This indicator glows in yellow when data is being ex changed between the computer and the LAN.

Link indicator (green)

This indicator glows in green when the computer is connected to a LAN and the LAN is functioning properly.

Underside

Figure 2-5 shows the underside of the computer. Make sure the display is closed before turning over your computer.

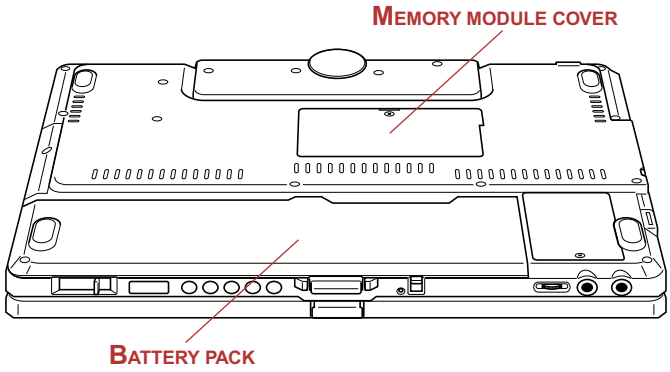


Figure 2-5 The underside of the computer

Expansion memory socket

The computer is equipped with two expansion memory slots (sockets). Use these slots (sockets) to install memory module to increase your computer's memory. Refer to the *Memory expansion* section in Chapter 8, *Optional Devices* for the detail.

Battery Pack

The Battery Pack powers the computer when the AC adaptor is not connected. The *Battery types* section in Chapter 6, *Power and Power-Up Modes*, describes how to access the Battery Pack. Battery Packs can be purchased from your TOSHIBA dealer to extend the computer's battery operating time.

Front with the display open

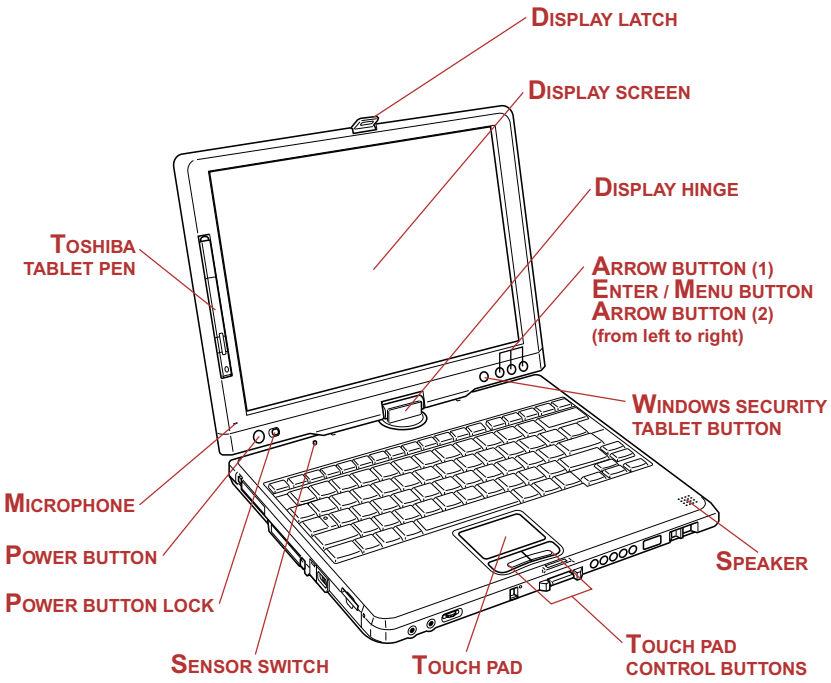


Figure 2-6 The front with the display open

Display screen The full-color LCD displays high-contrast text and graphics and is compatible with the industry standard Video Graphics Array (VGA). The LCD consists of up to 1024 × 768 pixels or dots. The computer has a Thin-Film Transistor (TFT) display. Refer to Appendix B.

When the computer operates on power through the AC adaptor, the display screen's image will be somewhat brighter than when it operates on battery power. The lower brightness level is intended to save battery power.

Display hinge The display hinge holds the display screen at easy-to-view angles.

TOSHIBA tablet pen Pen is contained on the left hand side of display. A pen enables data entry directly through display screen. Refer to the *Using the TOSHIBA tablet pen* section Chapter 4, *Operating Basic.*

Microphone A built-in microphone can be used to record monaural sounds into your application.

Power button Press the power button to turn the computer's power on and off.

Power button lock Set this lock to the locked position to prevent inadvertent power on or off.

Sensor switch This switch shuts down the computer when you close the cover in laptop mode and the panel power on/off feature is enabled. This switch does not shut down the computer when operating in tablet mode.

Touch pad A Touch pad located in the center of the palm rest is used to control the on-screen pointer. Refer to the *Using the Touch pad* section in Chapter 4, *Operating Basics*.

Touch pad control buttons Control buttons close to the Touch pad let you select menu items or manipulate text and graphics designated by the on-screen pointer.

Windows Security tablet button

This button functions as the same to Ctrl + Alt + Del keys to show Windows Task Manager.

Arrow button (1)

This button functions as the same to ↑ key.

Enter/Menu button

This button functions as the same to Enter key when tapped, or shows the menu screen when pressed for more than a second.

Arrow button (2)

This button functions as the same to ↓key.

Speaker

The speaker emits sound generated by your software as well as audio alarms, such as low battery condition, generated by the system.

Display latch

The Display latch secures the Display screen in its closed position. The latch can be rotated to lock the Display screen in the tablet mode.

Indicators

Figure 2-7 shows the indicators, which light when various computer operations are in progress.

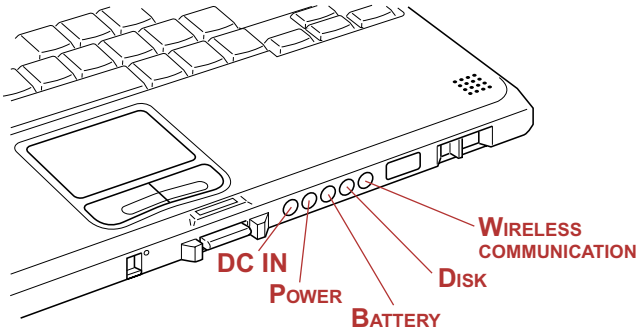


Figure 2-7 The power source/system indicators

Power source/system indicators

DC IN

The **DC IN** indicator glows green when DC power is supplied from the AC power adaptor. If the adaptor's output voltage is abnormal or if the power supply malfunctions, this indicator flashes in orange.

Power

The **Power** indicator glows green when the computer is on. If you turn off the computer in Resume mode, this indicator blinks orange (one second on, two seconds off) while the computer shuts down.

Battery

The **Battery** indicator shows the condition of the charge. Green means fully charged and orange means being charged. Refer to Chapter 6, *Power and Power-Up Modes*.

Disk

The **Disk** indicator glows in green when the computer is accessing a disk drive.

Wireless communication

The **Wireless communication** indicator lights when the Bluetooth and Wireless LAN functions are turned on.

The figures below show the positions of the keypad overlay indicators and the CapsLock indicator.

When the F10 key indicator glows, the keypad overlay lets you control the cursor. When the F11 key indicator glows, the keypad overlay lets you enter numbers.

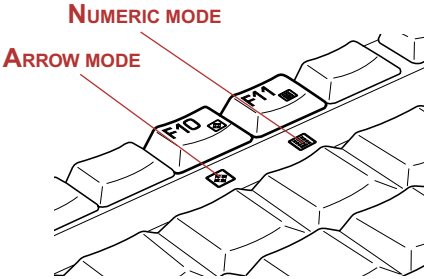


Figure 2-8 Keypad overlay indicators

When the CapsLock indicator glows, the keyboard is in all-caps mode.

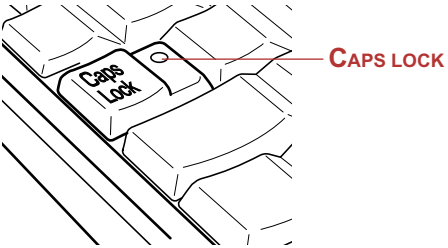


Figure 2-9 CapsLock indicator

Keyboard indicator

Caps Lock This indicator glows green when the alphabet keys are locked in uppercase.

Arrow mode When the **Arrow mode** indicator lights green, you can use the keypad overlay (white labeled keys) as cursor keys. Refer to the *Keypad overlay* section in Chapter 5, *The Keyboard*.

Numeric mode You can use the keypad overlay (white labeled keys) for numeric input when the **Numeric mode** indicator lights green. Refer to the *Keypad overlay* section in Chapter 5, *The Keyboard*.

AC adaptor

The AC adaptor converts AC power to DC power and reduces the voltage supplied to the computer. It can automatically adjust to any voltage from 100 to 240 volts and to a frequency of either 50 or 60 hertz, enabling you to use the computer in almost any region.

To recharge the battery, simply connect the AC adaptor to a power source and the computer. See Chapter 6 *Power and Power-Up Modes* for details.

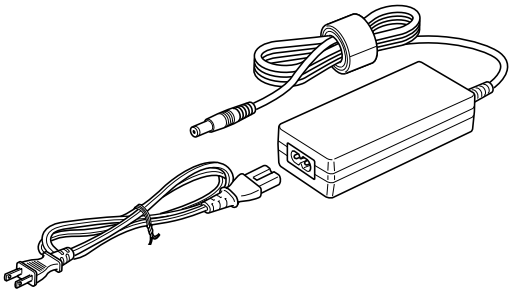


Figure 2-10 The AC adaptor

CAUTION: *Use only the AC adaptor that came with the computer or an equivalent optional adaptor. Use of the wrong adaptor could damage your computer. TOSHIBA assumes no liability for any damage in such case.*

Chapter 3

Getting Started

This chapter provides basic information to get you started using your computer. It covers the following topics:

- Setting up your work space — for your health and safety

  NOTE: *Be sure also to read* Instruction Manual for Safety & Comfort. *This guide, which is included with the computer, explains product liability.*

- Opening the computer in tablet mode
- Connecting the AC adaptor
- Opening the display
- Turning on the power
- Starting up for the first time
- Turning off the power
- Restarting the computer
- Restoring the preinstalled software from the product recovery CD-ROM

  NOTE: *All users should be sure to carefully read the sections turning on the power.*

Setting up your work space

Establishing a comfortable work site is important for you and your computer. A poor work environment or stressful work habits can result in discomfort or serious injury from repetitive strain to your hands, wrists or other joints. Proper ambient conditions should also be maintained for the computer's operation. This section discusses the following topics:

- ❑ General conditions
- ❑ Placement of the computer and peripheral devices
- ❑ Seating and posture
- ❑ Lighting
- ❑ Work habits

General conditions

In general, if you are comfortable, so is your computer, but read the following to make sure your work site provides a proper environment.

- ❑ Make sure there is adequate space around the computer for proper ventilation.
- ❑ Make sure the AC power cord connects to an outlet that is close to the computer and easily accessible.
- ❑ The temperature should be 5 to 35 degrees Centigrade (41 to 95 degrees Fahrenheit) and the relative humidity should be 20 to 80 percent.
- ❑ Avoid areas where rapid or extreme changes in temperature or humidity may occur.
- ❑ Keep the computer free of dust, moisture, and exposure to direct sunlight.
- ❑ Keep the computer away from heat sources, such as electric heaters.
- ❑ Do not use the computer near liquids or corrosive chemicals.
- ❑ Do not place the computer near objects that create strong magnetic fields (e.g., stereo speakers).
- ❑ Do not operate the computer in close proximity to a mobile phone.

Placement of computer

Position the computer and peripheral devices to provide comfort and safety.

- ❑ Set the computer on a flat surface at a comfortable height and distance. The display should be no higher than eye level to avoid eye strain.

- Place the computer so that it is directly in front of you when you work and make sure you have adequate space to easily operate other devices.
- Allow adequate space behind the computer to let you freely adjust the display. The display should be angled to reduce glare and maximize visibility.
- If you use a paper holder, set it at about the same height and distance as the computer.

Seating and posture

The height of your chair in relation to the computer and keyboard as well as the support it gives your body are primary factors in reducing work strain. Refer to the following tips and to figure 3-1.

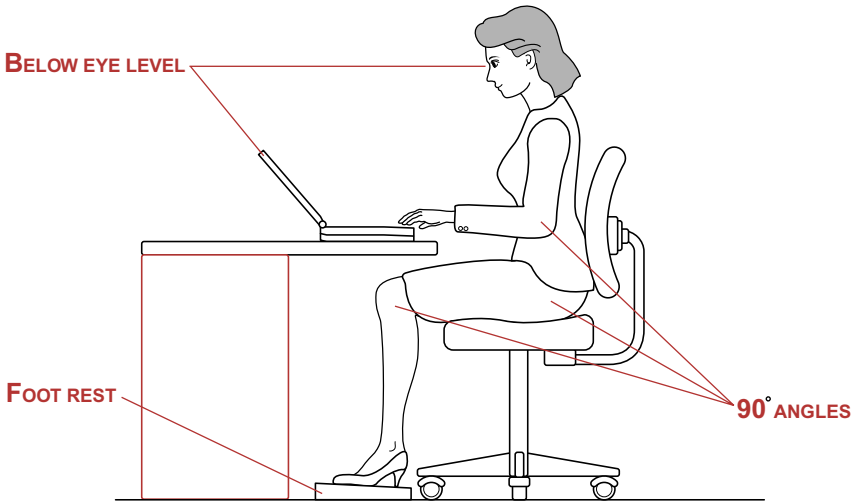


Figure 3-1 Posture and positioning of the computer

- Place your chair so that the keyboard is at or slightly below the level of your elbow. You should be able to type comfortably with your shoulders relaxed.
- Your knees should be slightly higher than your hips. If necessary, use a foot rest to raise the level of your knees to ease pressure on the back of your thighs.
- Adjust the back of your chair so it supports the lower curve of your spine.
- Sit straight so that your knees, hips and elbows form approximately 90 degree angles when you work. Do not slump forward or lean back too far.

Lighting

Proper lighting can improve legibility of the display and reduce eye strain.

- Position the computer so that sunlight or bright indoor lighting does not reflect off the screen. Use tinted windows, shades or other screen to eliminate sun glare.
- Avoid placing the computer in front of bright light that could shine directly in your eyes.
- If possible, use soft, indirect lighting in your computer work area. Use a lamp to illuminate your documents or desk, but be sure to position the lamp so that it does not reflect off the display or shine in your eyes.

Work habits

A key to avoiding discomfort or injury from repetitive strain is to vary your activities. If possible, schedule a variety of tasks into your work day. If you must spend long periods at the computer, finding ways to break up the routine can reduce stress and improve your efficiency.

- Sit in a relaxed posture. Good positioning of your chair and equipment as described earlier can reduce tension in your shoulders or neck and ease back strain.
- Vary your posture frequently.
- Occasionally stand up and stretch or exercise briefly.
- Exercise and stretch your wrists and hands a number of times during the day.
- Frequently, look away from the computer and focus your eyes on a distant object for several seconds, for example 30 seconds every 15 minutes.
- Take frequent short breaks instead of one or two long breaks, for example, two or three minutes every half hour.
- Have your eyes examined regularly and visit a doctor promptly, if you suspect you might be suffering from a repetitive strain injury.

A number of books are available on ergonomics and repetitive strain injury or repetitive stress syndrome. For more information on these topics or for pointers on exercises for such stress points as hands and wrists, please check with your library or book vendor. Also refer to the computer's *Instruction Manual for Safety & Comfort*.

Operating the computer in tablet mode

NOTE: *TOSHIBA 3500 computer can be used in two ways; ordinary laptop PC and tablet PC. You can use the computer as tablet PC that is operated with attached TOSHIBA tablet pen by turning LCD panel in 180 degrees and closing it. This manual calls the use as an ordinary laptop PC as laptop mode, and the use as tablet PC as tablet mode. Refer to Changing to the tablet mode in Chapter 4 Operating Basic for the changing of the mode*

When operating the computer in tablet mode, follow the instructions below.

Figure 3-2

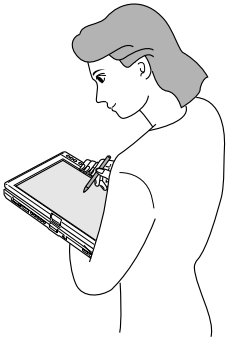


Figure 3-3

- Hold the computer firmly on your forearm. Do not block the vent.
- Remove the connector of AC adapter from the computer when using the computer in tablet mode held in your forearm.
- Do not use the computer while walking or driving a car.
- Change to laptop mode and turn off the computer before carrying. Do not carry the computer with power on or in stand by state. Do not carry the computer while DISK LED is glowing.
- Do not expose the computer with rapid temperature change (such as the case to bring the PC from cold outside into warm room).
  When rapid temperature change is unavoidable, turn on the computer after a couple of hours. Avoid dew condensation.

- Remove all external peripheral devices and their connection cables from the computer before carrying.
- Do not drop the computer nor apply excessive impact on the computer. Do not leave the computer in an automobile where the computer is exposed to direct sunbeam.
- Do not put the computer in tablet mode in a bag.

> ***CAUTION:*** *Do not block the vent of the computer when holding it in your forearm to use in tablet mode. If you maintain to expose your skin to the hot air released from the vent for a long time, your skin might suffer low temperature injury.*

Connecting the AC adaptor

Attach the AC adaptor when you need to charge the battery or you want to operate from AC power. It is also the fastest way to get started, because the Battery Pack will need to be charged before you can operate from battery power.

The AC adaptor can be connected to any power source supplying from 100 to 240 volts and 50 or 60 hertz. For details on using the AC adaptor to charge the Battery Pack, refer to Chapter 6, *Power and Power-Up Modes*.

> ***CAUTION:*** *Use only the AC adaptor that came with the computer or an equivalent optional adaptor. Use of the wrong adaptor could damage your computer. TOSHIBA assumes no liability for any damage in such case.*

1. Connect the power cord to the AC adaptor.

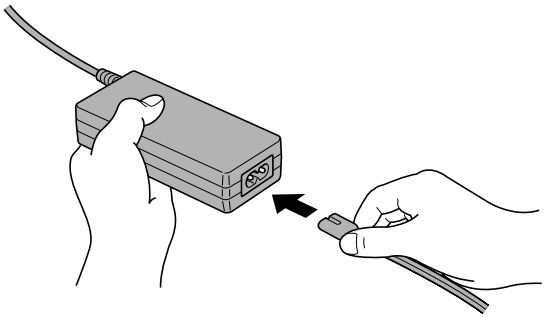


Figure 3-4 Connecting the power cord to the AC adaptor

2. Connect the AC adaptor's DC output plug to the **DC IN** port on the back of the computer.

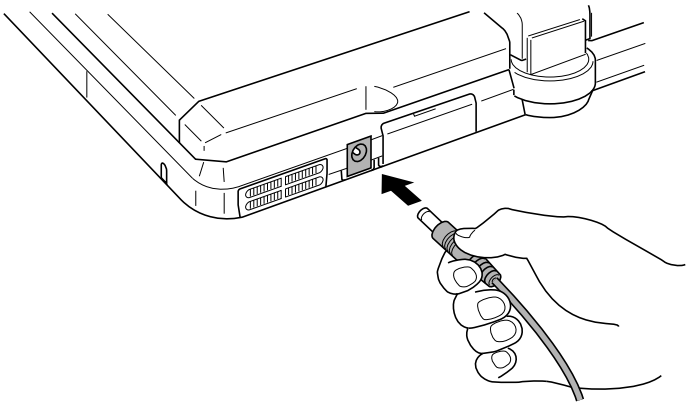


Figure 3-5 Connecting the adaptor to the computer

3. Plug the power cord into a live wall outlet. The **Battery** and **DC IN** indicator on the front of the computer should glow.

Opening the display

The display panel can be rotated in a wide range of angles for optimal viewing.

1. Push down the display latch on the front of the computer to unlatch the display panel.
2. Lift the panel up and adjust it to the best viewing angle for you.

Caution: *User reasonable care when opening and closing the display panel. Opening it vigorously or slamming it shut could damage the computer.*

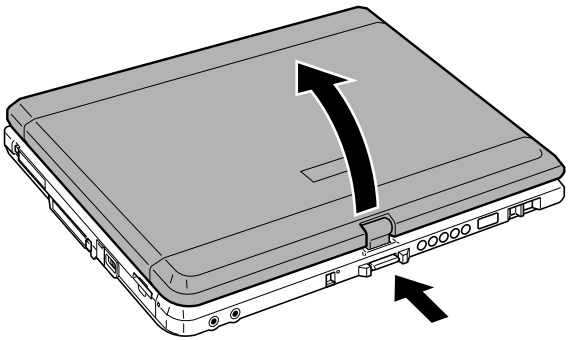


Figure 3-6 Opening the display panel

Turning on the power

This section describes how to turn on the power.

> ***NOTE:*** *After you turn on the power for the first time, do not turn it off until you have set up the operating system. Refer to the section Starting up for the first time in this chapter.*

1. If the external diskette drive is connected, make sure it is empty. If a diskette is in the drive, press the eject button and remove the diskette.
2. Open the display panel.
3. Slide the power button lock toward the right of the computer to unlock the button, then press and hold the button for two or three seconds.

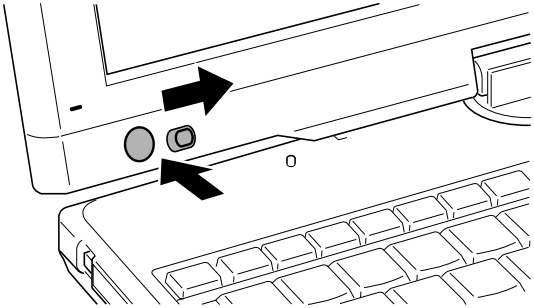


Figure 3-7 Turning on the power

Starting up for the first time

When you first turn on the power, the computer's initial screen is the Microsoft Windows XP Tablet PC edition Startup Screen Logo. Follow the on-screen directions for each screen. During setup, you can click the **Back** button to return to the previous screen.

Be sure to read the Windows **End User License Agreement** display carefully.

> ***NOTE:*** *You cannot use the tablet pen when Windows is in Setup. Use keyboard or touch pad while Windows is setting up.*

Turning off the power

The power can be turned off in one of the following modes: Shut down (Boot), Hibernation or Standby mode.

Shut Down mode (Boot mode)

When you turn off the power in Shut Down mode, no data is saved and the computer will boot to the operating system's main screen.

1. If you have entered data, save it to the hard disk or to a diskette.
2. Make sure all disk activity has stopped, then remove any CD/DVD-ROMs or diskette.

   > ***CAUTION:*** *Make sure the* **Disk** *indicator is off. If you turn off the power while a disk is being accessed, you can lose data or damage the disk.*

3. Click **start** and click **Turn off computer**. From the **Turn off computer** window, click **Turn off** .
4. Turn off the power to any peripheral devices.

   > ***CAUTION:*** *Do not turn the computer or devices back on immediately. Wait a moment to let all capacitors fully discharge.*

Hibernation mode

The hibernation feature saves the contents of memory to the hard disk when the computer is turned off. The next time the computer is turned on, the previous state is restored. The hibernation feature does not save the status of peripheral devices.

CAUTIONS:

1. *Save your data. While entering hibernation mode, the computer saves the contents of memory to the HDD. However, for safety sake, it is best to save your data manually.*
2. *Data will be lost if you remove the battery or disconnect the AC adaptor before the save is completed. Wait for the* **Disk** *indicator to go out.*
3. *Do not install or remove a memory module while the computer is in hibernation mode. Data will be lost.*

Benefits of hibernation

The hibernation feature provides the following benefits:

- Saves data to the hard disk when the computer automatically shuts down because of a low battery.

  NOTE: *For the computer to shut down in hibernation mode, the hibernation feature must be enabled in two places in TOSHIBA Power Saver: the Hibernate window and the Battery Alarm item of the Alarm window. Otherwise, the computer will shut down in Standby mode. If battery power becomes depleted, data saved in Standby mode will be lost.*

- You can return to your previous working environment immediately when you turn on the computer.
- Saves power by shutting down the system when the computer receives no input or hardware access for the duration set by the system hibernate feature.
- You can use the panel power off feature.

Starting Hibernation

> ***NOTE:*** *You can also enable Hibernation by pressing* **Fn + F4**. *See Chapter 5, Keyboard, for details.*

To enter Hibernation mode, follow the steps below.

1. Click **Start** and click **Turn Off Computer**.
2. In **Turn Off Computer**, click **Hibernate**. The **Standby** icon will be displayed initially. To display the **Hibernate** icon press the **Shift** key.

The computer will also enter Hibernate mode automatically when you:

- ❑ Press the power button.
- ❑ Close the lid (the Display).

First, however, make the appropriate settings according to the steps below.

1. Open the Windows **Control Panel**.
2. Open **Performance and Maintenance**.
3. Open **TOSHIBA Power Saver**.
4. Select the **Hibernate** window, select the **Enable Hibernate support** check box and click the **Apply** button.
5. Select the **Power Save Modes** window.
6. Double-click **Power Save Modes** and open the **System Power Mode** window.
7. Enable the desired Hibernation settings for **When I press the power button** and **When I close the lid**.
8. Click the **OK** button.

Data save in hibernation mode

When you turn off the power in hibernation mode, the computer takes a moment to save current memory data to the hard disk. During this time, the **Disk** indicator will light.

After you turn off the computer and memory data is saved to the hard disk, turn off the power to any peripheral devices.

> ***CAUTION:*** *Do not turn the computer or devices back on immediately. Wait a moment to let all capacitors fully discharge.*

Standby mode

In standby mode, the power remains on, but the CPU and all other devices are in sleep mode.

> ***NOTE:*** *If the computer is not used or accessed in any way, including receipt of e-mail, for 30 minutes when the AC adaptor is connected, the computer will automatically enter Standby mode (TOSHIBA Power Saver default).*
>
> - *To restore operation, press the power button or press any key. The latter action works only if Wake-up on Keyboard is enabled in HW Setup.*
> - *If a network application is active when the computer automatically enters Standby, it might not be restored when the computer wakes up from standby. To prevent the computer from automatically entering standby mode, disable Standby in TOSHIBA Power Saver. Open the Standby setting. That action, however, will nullify the computer's Energy Star compliance.*

Standby precautions

- Before entering Standby mode, be sure to save your data.
- Do not install or remove a memory module while the computer is in standby mode. The computer or the module could be damaged.
- If you carry the computer on board an aircraft or into a hospital, be sure to shut down the computer in hibernation mode or in shutdown mode to avoid radio signal interference.

Benefits of standby

The standby feature provides the following benefits:

- Restores the previous working environment more rapidly than does hibernation.
- Saves power by shutting down the system when the computer receives no input or hardware access for the duration set by the System Standby feature.
- You can use the panel power off feature.

Executing standby

> ***NOTE:*** *You can also enable Standby by pressing* **Fn + F3**. *See Chapter 5, The Keyboard, for details.*

You can enter standby mode in one of three ways:

1. Click **Start**, click **Turn Off Computer** and click **Stand by**.
2. Close the display panel. This feature must be enabled. To enable it, select the **TOSHIBA Power Saver** icon in the Control Panel and open the **System Power Mode** item.
3. Press the power button. This feature must be enabled. To enable it, select the **TOSHIBA Power Saver** icon in the Control Panel and open the **System Power Mode** item.

When you turn the power back on, you can continue from where you left when you shut down the computer.

> ***NOTES:*** *1. When the computer is shut down in standby mode, the power indicator flashes in orange.*
>
> *2. If you are operating the computer on battery power, you can lengthen the operating time by shutting down in hibernation mode. Standby mode consumes more power.*

Standby limitations

Standby will not function under the following conditions:

- Power is turned back on immediately after shutting down.
- Memory circuits are exposed to static electricity or electrical noise.

Restarting the computer

Certain conditions require that you reset the system. For example, if:

- You change certain computer settings.
- An error occurs and the computer does not respond to your keyboard commands.

There are three ways to restart the computer system:

1. Press **Ctrl + Alt + Del** or Windows Securiy tablet button to display the **Windows Task Manager**, then select **Shutdown** and **Restart**.
2. Select **Restart** from the **Turn Off Computer** window in the start menu.
3. Press the power button and hold it down for five seconds. Wait 10 to 15 seconds, then turn the power on again by pressing the power button.

Restoring the preinstalled software from the Product Recovery CD-ROM

If preinstalled files are damaged, use the Product Recovery CD-ROM to restore them. To restore the operating system and all preinstalled software, follow the steps below.

> ***CAUTION:*** *When you reinstall the Windows operating system, the hard disk will be reformatted and all data will be lost.*

1. Load the Product Recovery CD-ROM in the external optional optical disk drive and turn off the computer's power.
2. Hold down the **F12** key and turn on the power. When **In Touch with Tomorrow TOSHIBA** appears, release the **F12** key.
3. Use the left or right cursor key to select the CD-ROM icon in the display menu. For details, refer to the *Boot priority* section in Chapter 7, *HW Setup*.
4. Follow the on-screen instructions.

Operating Basics

This chapter gives information on basic operations including using the Touch Pad, the TOSHIBA tablet pen, the external diskette drive, the wireless communication, LAN and the internal modem. It also provides tips on caring for your computer and on heat dispersal.

Using the Touch Pad

To use the Touch Pad, simply press and move your finger tip across it in the direction you want the on-screen pointer to go.

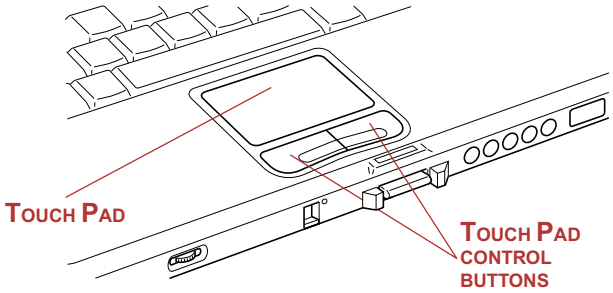


Figure 4-1 Touch Pad and Touch Pad control buttons

Two Touch Pad control buttons are used like the buttons on a mouse pointer. Press the left button to select a menu item or to manipulate text or graphics designated by the pointer. Press the right button to display a menu or other function depending on the software you are using.

> ***CAUTION:*** *Do not press the touch pad too hard nor press it with a sharp object such as a ball point pen against the touch pad. The touch pad could be damaged.*

For some functions, you can tap the touch pad instead of pressing a control button.

Click Tap the touch pad once

Double-click Tap the touch pad twice

Drag and drop
1. Select the material you want to move.
2. Leave your finger on the Touch Pad after selecting the material and move it.
3. Lift your finger to drop the item at a place where you want it.

Scroll Vertical: Move your finger to and fro the right edge of the touch pad.

Horizontal: Move your finger left or right along the bottom edge of the touch pad.

Using the TOSHIBA tablet pen

Eraser button You can use this button as an eraser when using the application software for graphics. The application software for texts enables you to select and delete characters with one-touch action.

Pen button Acts as the clicking of the right touch pad control button.

Pen point Acts as the clicking of the left touch pad control button.

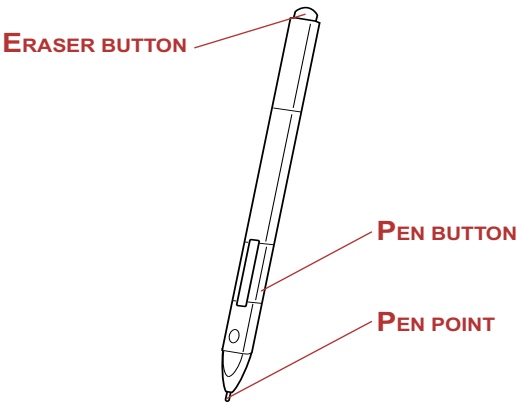


Figure 4-2 The TOSHIBA tablet pen

You can use the tablet pen to execute actions and enter data. Hold the tablet pen in a natural position and tap, press or trace on the screen lightly. Before you begin using the TOSHIBA 3500 for the first time, you will need to calibrate the tablet pen. Refer to *Chapter 9*, *Pointing device* in for the detail.

CAUTIONS: *Observe the following precautions on the handling of the tablet pen.*

1. *Do not tap or press the tablet pen forcefully against the Display screen. It could damage the tablet pen and Display screen.*
2. *Avoid using or keeping the tablet pen in the place of rapid temperature change or in a car where the tablet pen is exposed to direct sunbeam.*
   Keep the tablet pen without pressure constantly applied to the switch of the tablet pen. Constant pressure to the button causes a malfunction or characteristic deterioration.
3. *The tablet pen is composed of precision parts. Do not drop the tablet pen. Strong impact causes a malfunction or characteristic deterioration.*
4. *Do not apply excessive force to the tablet pen point and the side switch. Excessive force applied to these parts causes short life or characteristic deterioration. (Allowable force to pen point, Eraser button, Pen button: less than 1 kg, for less than 30 seconds)*
5. *Avoid water to enter in the tablet pen or dew condensation. Intrusion of water or dew condensation causes malfunction.*
6. *Do not disassemble the tablet pen. It causes maladjustment or short life.*
7. *Do not stain the tablet pen with cosmetics or chemicals. It causes deterioration of appearance.*
   Use a glass wiping cloth or dry cloth to clean the tablet pen when cleaning. Do not use volatile liquid such as alcohol, thinner or petroleum benzine.

8. *Do not apply excessive force to the tablet pen point. Crooked or deformed pen point due to excessive force causes malfunction.*

9. *Keep the small parts of the tablet pen such as the pen point or the knob of the side switch away from infant to prevent them to swallow*

10. *Do not use a ball point pen instead of the tablet pen delivered with the product.*

11. *Do not use a broken pen tip.*

NOTE: *TOSHIBA is not liable to the quality problem of the products due to the use of the tablet pen in an environment where above conditions are not satisfied because of the use by unspecified number of users.*

Installing the tablet pen

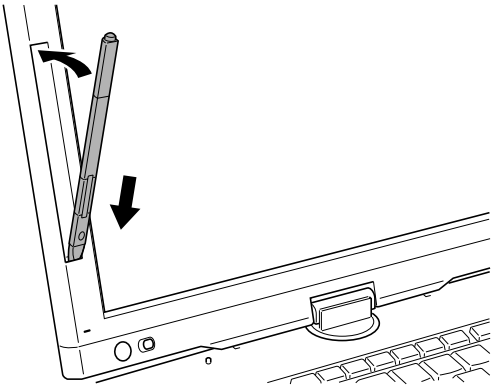


Figure 4-3 Installing the tablet pen

The tablet pen is included in the product when purchased. Take out the tablet pen from the carton and install it to the computer as the following.

1. Insert the head of the tablet pen into the groove first.
2. Press the tablet pen at the tail. The tablet pen is seated in the groove.

Removing the tablet pen

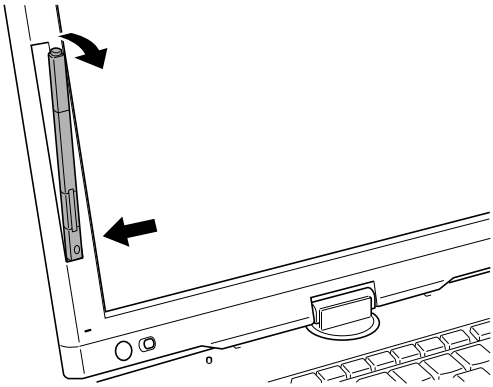


Figure 4-4 Removing the tablet pen

1. To remove the tablet pen from the groove, press the tablet pen at the head.
2. Tail of the tablet pen rises up.

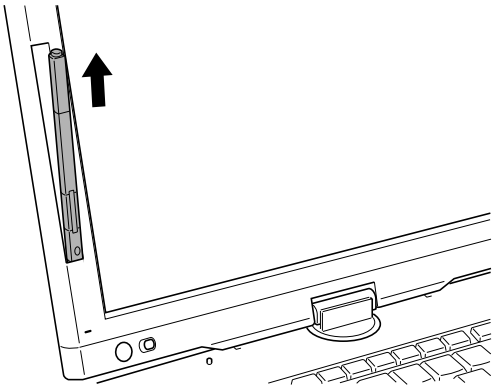


Figure 4-5 Drawing out the tablet pen

Pen actions

You can use the tablet pen to enter data, start programs, move objects and execute other actions.

Single tap

Lightly tap the tip of the tablet pen on an object and lift it immediately to execute an action. A single tap is similar to clicking the left touch pad control button.

Double tap

Lightly tap the tip of pen twice on an object and lift it immediately to execute an action. A double-tap is similar to double-clicking the left touch pad control button.

Press and hold

Touch the tip of pen to the display screen and hold it there to display a pop-up menu or other action. Press and hold is similar to clicking the right touch pad control button.

Drag

Touch the tablet pen to the screen. Without lifting the tablet pen, drag it across the screen to select text or objects.

Drag and drop

Touch the tablet pen to the screen to select an object. Without lifting the tablet pen, drag it across the screen. Lift the tablet pen to drop the object to a new location.

Replacing the pen tip

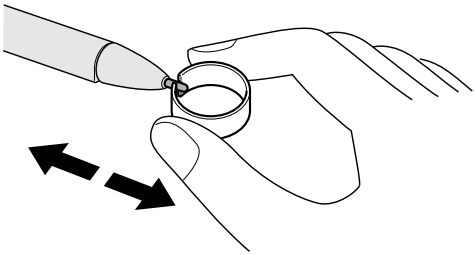


Figure 4-6

1. To replace the pen tip, pinch the tip with a draw-out tool and pull it out.
2. Insert a new tip into the tablet pen at the flat end of the tip and press it to seat securely.

NOTE: *Short and worn pen point is difficult to pull out. Replace the pen point with refill before it becomes too short.*

NOTE: *TOSHIBA recommends the customer to keep another pen set as a spare. You can buy the pen set from TOSHIBA dealer.*

CAUTION: *Do not use the broken pen tip. When it breaks, replace it with a refill delivered with the tablet pen. Use of the broken pen tip causes to make scratches on the display panel. When the reserve refills have run out, purchase a new pen set from a TOSHIBA dealer.*

Changing to the Tablet mode

To change the laptop mode to the tablet mode, follow the instructions below.

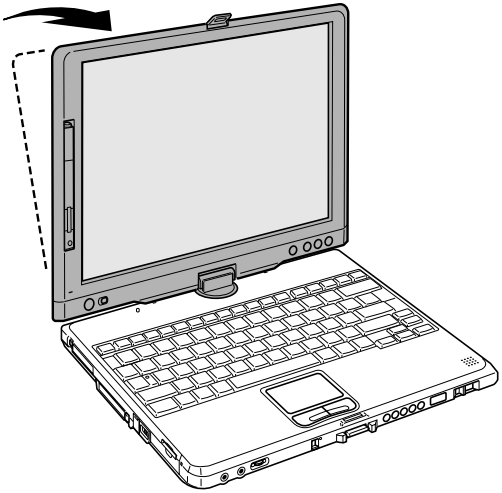


Figure 4-7 Changing to the Tablet mode (1)

CAUTION: *Place the computer on a stable, flat place such as a desktop and rotate the display panel slowly, holding the panel at its lower part. The display panel is designed not to rotate more than 180 degrees. Rotating the display panel more than 180 degrees with an excessive force causes to damage the panel.*

The rotating direction to change the mode is the following:

From laptop mode to Tablet mode: clockwise 180 degrees

Tablet mode icon

Turn the display panel to the direction indicated by the Tablet mode icon .

From Tablet mode to laptop mode: counter-clockwise 180 degrees

Laptop mode icon

Turn the display panel to the direction indicated by the laptop mode icon.

1. Open the display panel to the upright position.

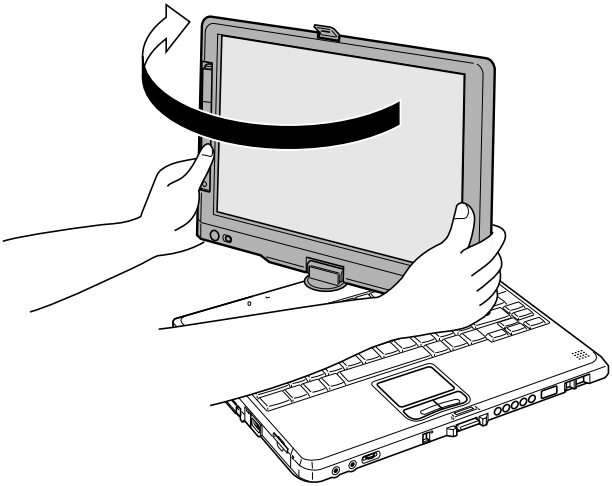


Figure 4-8 Changing to the Tablet mode (2)

2. Rotate the display panel clockwise slowly.

NOTE: *Do not apply excessive rotating force to the display panel. It causes damage of the display panel.*

3. Turn the Display latch in 180 degrees to the down side.

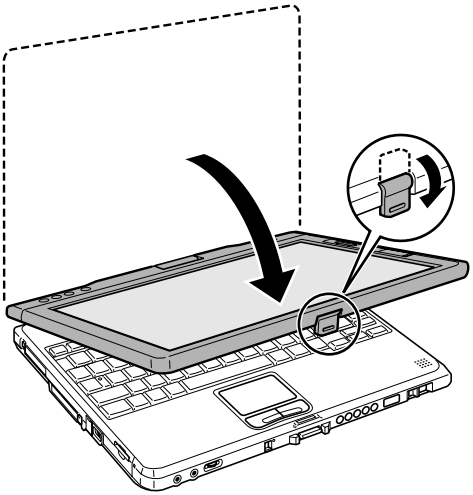


Figure 4-9 Changing to the Tablet mode (3)

4. Close the display panel slowly with LCD surface outside.

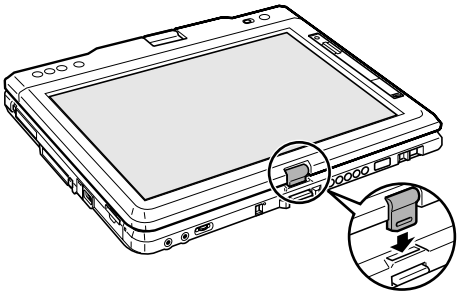


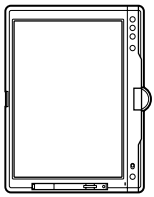
Figure 4-10 Changing to the Tablet mode (4)

5. Turn the Display latch downward.
6. Insert the Display latch in the slit.
7. Press the display panel downward softly.

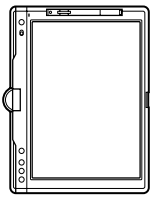
Changing the screen orientation

The orientation of desktop screen can be changed to one of the following four display modes:

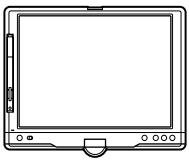
● Primary portrait



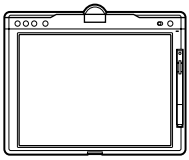
● Secondary portrait



● Primary landscape



● Secondary landscape



NOTES:

1. Execute the following applications on Primary landscape:

- *3D game software*
- *3D screen saver*
- *Playback of motion picture, such as a case of DVD-Video playback on the computer connecting an external DVD-ROM Drive.*

CAUTION: *Do not play 3D game software or replay DVD-Video on the screen other than Primary landscape. An abnormality will appear on the Windows screen display when you replay a DVD-Video on the screen other than Primary landscape because DVD playback software can boot only in the Primary landscape.*

2. The screen cannot rotate in one of the following cases. Quit the running application and then rotate the screen:

- *Running of the application that changes the screen resolution dynamically (such as a game that is execute on full-screen mode)*
- *DOS prompt in full-screen mode*
- *Running of 3D screen saver*

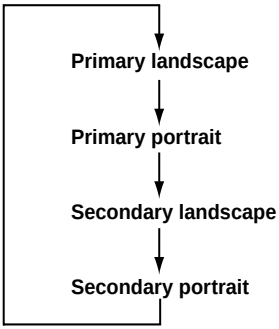
CAUTION: *An abnormality will appear a part of the Windows screen display when you change the PC from Tablet mode to laptop mode while 3D screen saver is running. In such a case, press any key in the laptop mode to cancel 3D screen saver.*

Method 1: Changing the screen orientation using Enter/Menu Button

1. 1. Press Enter/Menu Button for more than one second. TOSHIBA Table Menu will appear.
2. Point the cursor at Screen Rotation using Arrow Button (1) or (2) and press Enter/Menu Button.
3. Select the rotation angle using Arrow Button (1) or (2) and press Enter/Menu Button.

Method 2: Changing the screen orientation using Task Bar

1. Right click "Change tablet and pen settings" icon in the Task Bar. Click "Change screen orientation" from the menu.
   The screen orientation is set to change in the following order when purchased.



You can change the above sequence in the following procedure:

(1) Double click "Change tablet and pen settings" icon in the Task Bar.
(2) Click "Change" button in "Display" tab.
(3) Change the sequence in "Orientation Sequence Settings" screen. Click "OK" button.

NOTE: *You can set the orientation of the desktop screen just after rotating the display from*

Start → All Programs → TOSHIBA Rotation Utility

Changing to the laptop mode

To change the Tablet mode to the laptop mode, follow the instructions below.

1. Press the Display latch and raise the display to the upright position carefully.
2. Rotate the display counter-clockwise slowly.
3. Turn the display latch toward you for the next closing of the display.

Using the USB FDD Kit

A 3 1/2" external diskette drive module connects to the USB port.

NOTE: *The USB FDD Kit is an option with some models.*

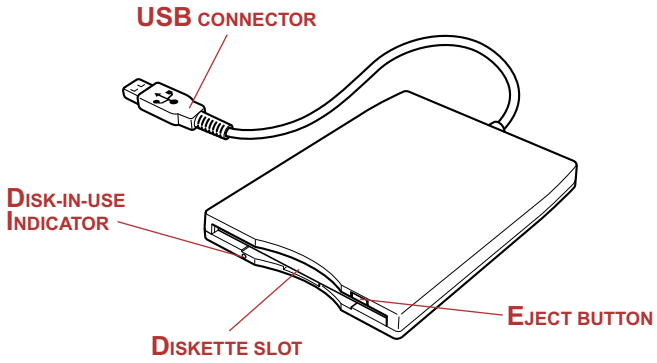


Figure 4-11 The 3 1/2" USB FDD Kit

Eject button When a diskette is fully seated in the drive, the eject button pops out. To remove a diskette, push in the eject button and the diskette pops out partially for easy removal.

Diskette slot Insert diskettes in this slot.

Disk-In-Use Indicator This indicator lights when the diskette is being accessed.

CAUTION: *Check the* **Disk-In-Use** *indicator when you use the diskette drive. Do not press the eject button, disconnect a drive cable or turn off the computer while the light is glowing. Doing so could destroy data and damage the diskette or the drive.*

NOTES:
1. *The external diskette drive should be placed on a flat, horizontal surface when in use. Do not set the drive on an incline greater than 20° while it is operating.*
2. *Do not set anything on top of the diskette drive.*
3. *If you need to boot the computer from the diskette drive or if you use an OS that does not support USB, you must set the USB-FDD Legacy Emulation feature in HW Setup to Enabled. Refer to the USB section in Chapter 7.*

Connecting 3 1/2" diskette drive

To connect the drive, plug the diskette drive connector into a USB port. Refer to Figure 4-12.

NOTE: *Make sure the connector is right side up and properly aligned with the socket. Do not try to force the connection, doing so can damage the connecting pins.*

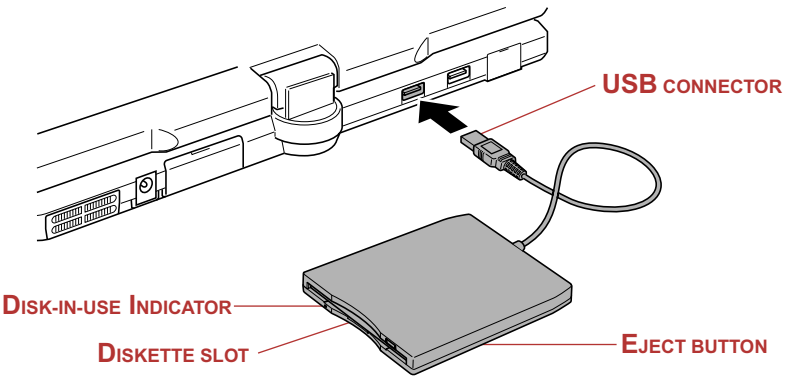


Figure 4-12 Connecting the diskette drive to the computer

NOTE: *If you connect the diskette drive after turning on the computer, it will take about 10 seconds for the computer to recognize the drive. Do not disconnect and reconnect before 10 seconds has elapsed.*

Disconnecting 3 1/2" diskette drive

When you have finished using the diskette drive, follow the procedures below to disconnect it:

1. Wait for the indicator light to go out to make sure all diskette activity has stopped.

   CAUTION: *If you disconnect the diskette drive or turn off the power while the computer is accessing the drive you may lose data or damage the diskette or the drive.*

2. Pull the diskette drive connector out of the USB port.

Diskette care

Handle your diskettes with care. The following simple precautions will increase the lifetime of your diskettes and protect the data you store on them:

1. Store your diskettes in the container they came in to protect them and keep them clean. If a diskette is dirty, do not use cleaning fluid. Clean it with a soft damp cloth.
2. Do not slide back the diskette's protective metal covering or touch the diskette's magnetic surface. Fingerprints may prevent the diskette drive from reading data from the diskette.
3. Data may be lost if the diskette is twisted; bent; or exposed to direct sunlight or extreme heat or cold.
4. Do not place heavy objects on your diskettes.
5. Do not eat, smoke, or use erasers near your diskettes. Foreign particles inside the diskette's jacket can damage the magnetic surface.
6. Magnetic energy can destroy the data on your diskettes. Keep your diskettes away from speakers, radios, television sets and other sources of magnetic fields.

Wireless communications

The computer's wireless communication function supports both wireless LAN and Bluetooth devices.

In this chapter, the descriptions on Wireless LAN or Bluetooth are applicable to the model equipped with Wireless LAN or Bluetooth function respectively.

Carefully check that the computer is available for wireless LAN communication in Tablet mode for wireless LAN and Bluetooth.

Laptop mode gives the highest reception sensitivity of wireless communication. Change the operation mode of the computer to the laptop mode when you cannot use the wireless communication in the Tablet mode.

Also try to use the computer in the laptop mode with the LCD panel open when you cannot use the wireless communication even if in the laptop mode with the LCD closed.

The reception sensitivity of wireless communication becomes lower in the operation mode described below.

Laptop mode (with LCD panel open) > Laptop mode (with LCD panel closed) > Tablet mode

Wireless LAN

The wireless LAN is compatible with other LAN systems based on Direct Sequence Spread Spectrum radio technology that complies with IEEE 802.11 wireless LAN standard (Revision B). It supports the following features:

- Automatic Transmit Rate Select mechanism in the transmit range of 11, 5.5, 2 and 1 Mbit/s.
- Frequency Channel Selection (2.4 GHz)
- Roaming over multiple channels
- Card Power Management
- Wired Equivalent Privacy (WEP) data encryption, based on the 128 bit RC4 encryption algorithm as defined in the IEEE 802.11 standard on wireless LANs.

  Wake-up on LAN does not function on a wireless LAN.

Security

Be sure to enable WEP (encryption) function. Otherwise your computer will allow the illegal access by outsider through wireless LAN to cause illegal intrusion, eavesdropping, and loss or destruction of stored data. TOSHIBA strongly recommend the customer to enable the WEP function.

Bluetooth wireless technology

Bluetooth™ wireless technology eliminates the need for cables between electronic devices such as desktop computers, printers and mobile phones.

You cannot use the built-in Bluetooth functions and an optional Bluetooth PC card simultaneously.

Bluetooth wireless technology has the following features:

Worldwide operation

The Bluetooth radio transmitter and receiver operates in the 2.45 GHz band, which is license-free and compatible with radio systems in most countries in the world.

Radio links

You can easily establish links between two or more devices. The link is maintained even if the devices are not within line of sight.

Security

Two advanced security mechanisms ensure a high level of security:

- Authentication prevents access to critical data and makes it impossible to falsify the origin of a message.
- Encryption prevents eavesdropping and maintains link privacy.

Wireless communication switch

You can enable or disable wireless LAN and Bluetooth function, with the on/off switch. No transmissions are sent or received when the switch is off. Slide the switch toward the back of the computer to turn it on and toward the front of the computer to turn it off.

> ***CAUTION:*** *Set the switch to off in airplanes and hospitals. Check the indicator. It will stop glowing when the wireless communication function is off.*

Wireless communication Indicator

The wireless communication indicator indicates the status of the wireless communication functions.

Indicator status	Indication
Indicator off	Wireless communication switch is set to off. Automatic power down because of overheating. Power malfunction
Indicator glows	Wireless communication switch is on. Wireless LAN or Bluetooth is turned on by an application.

If you used the Task Bar to disable W-LAN, restart the computer or follow the procedures below to enable the system to recognize W-LAN. Open or click the following: **start**, **Control Panel**, **System**, **Hardware Device Manager**, **Network adapters**, **TOSHIBA Wireless LAN Mini PCI Card** and **enable**.

> ***NOTE:*** *Indication of Wireless Communication Standards (Wireless LAN and Bluetooth) The indication of Wireless LAN and Bluetooth is described on the sticker affixed to the computer. The sticker can be seen by removing a battery pack from the computer.*

LAN

The computer has built-in support for Ethernet LAN (10 megabits per second, 10BASE-T) and Fast Ethernet LAN (100 megabits per second, 100BASE-Tx). This section describes how to connect/disconnect to a LAN.

> ***CAUTION:*** *Do not install or remove an optional memory module while Wake-up on LAN is enabled.*
>
> ***NOTE:*** *Wake-up on LAN does not work without the AC adaptor. Leave it connected, if you are using this feature.*

LAN cable types

> ***CAUTION:*** *The computer must be configured properly before connecting to a LAN. Logging onto a LAN using the computer's default settings could cause a malfunction in LAN operation. Check with your LAN administrator regarding set-up procedures.*

If you are using Fast Ethernet LAN (100 megabits per second, 100BASE-TX), be sure to connect with a CAT5 cable. You cannot use a CAT3 cable.

If you are using Ethernet LAN (10 megabits per second, 10BASE-T), you can connect with either a CAT5 or a CAT3.

Connecting LAN cable

To connect the LAN cable, follow the steps below.

> ***CAUTION:*** *Connect the AC adaptor before connecting the LAN cable. The AC adaptor must remain connected during LAN use. If you disconnect the AC Adaptor while the computer is accessing a LAN, the system may hang up.*

1. Turn off the power to the computer and to all external devices connected to the computer.
2. Plug one end of the cable into the LAN's jack. Press gently until you hear the latch click into place.

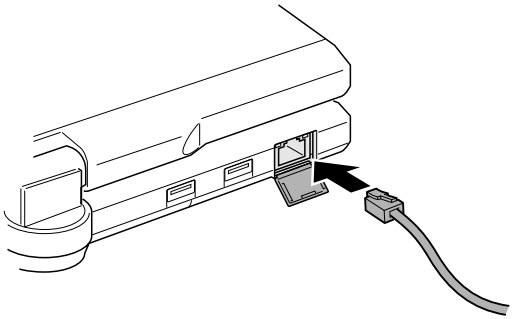


Figure 4-13 Connecting the LAN cable

3. Plug the other end of the cable into a LAN hub connector. Check with your LAN administrator before connecting to a hub.

> ***NOTE:*** *When the computer is exchanging data with the LAN, the* **LAN Active** *indicator glow in yellow. When the computer is connected to a LAN hub but is not exchanging data, the* **Link** *indicator glows in green.*

Disconnecting LAN cable

To disconnect the LAN cable, follow the steps below.

> ***CAUTION:*** *Make sure the LAN Active indicator (yellow LED) is out before you disconnect the computer from the LAN.*

1. Pinch the lever on the connector in the computer and pull out the connector.
2. Disconnect the cable from the LAN hub in the same manner. Check with your LAN administrator before disconnecting from the hub.

Using the microphone

Your computer has a built-in microphone that can be used to record monaural sounds into your applications. It can also be used to issue voice commands to applications that support such functions.

Since your computer has a built-in microphone and speaker, "howling" may be heard under certain conditions. Howling occurs when sound from the speaker is picked up in the microphone and amplified back to the speaker, which amplifies it again to the microphone.

This howling occurs repeatedly and causes a very loud, high-pitched noise. It is a common phenomenon that occurs in any sound system when the microphone input is output to the speaker (throughput) and the speaker volume is too loud or too close to the microphone. You can control throughput by adjusting the volume of your speaker or through the Mute function.

To adjust the volume or activate Mute, click **start**, point to **All Programs**, point to **Accessories**, point to **Entertainment** and click **Volume Control**. In the **Master Volume** panel, you can use the slide bars to adjust the volume level or click **Mute** at the bottom of the panel.

Modem

This section descries how to connect and disconnect the internal modem to and from a telephone jack.

NOTE: *The internal modem does not support the voice functions. All data and fax functions are supported.*

CAUTIONS: 1. *In case of a lightning storm, unplug the modem cable from the telephone jack.*

2. *Do not connect the modem to a digital telephone line. A digital line will damage the modem.*

Region selection

Telecommunication regulations vary from one region to another, so you will need to make sure the internal modem's settings are correct for the region in which it will be used.

1. Click **start**, point to **All Programs**, point to **TOSHIBA Internal Modem** and click **Region Select Utility**.

   NOTE: *Do not use the Country/Region Select function in the Modem setup utility in the Control Panel if the function is available. If you change the Country/Region in the Control Panel, the change may not take effect.*

2. The Region Selection icon will appear in the Windows Task Bar.

Figure 4-14 The Region Selection icon (Windows XP Tablet PC Edition)

3. Click the icon with the primary mouse button to display a list of regions that the modem supports. A sub menu for telephony location information will also be displayed. A check will appear next to the currently selected region and telephony location.
4. Select a region from the region menu or a telephony location from the sub-menu.
   - When you click a region it becomes the modem's region selection, and the New Location for telephony will be set automatically.
   - When you select a telephony location, the corresponding region is automatically selected and it becomes the modem's current region setting.

Properties menu

Click the icon with the secondary mouse button to display the following menu.

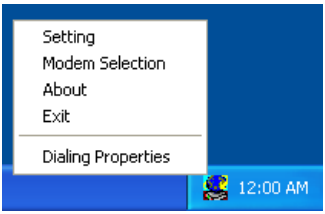


Figure 4-15 The menu list (Windows XP Tablet PC Edition)

Setting

You can enable or disable the following settings:

AutoRun Mode

Region Select Utility starts automatically when you start up the operating system.

Open the Dialing Properties dialog box after selecting region.

The dialing properties dialog box will be displayed automatically after you select the region.

Location list for region selection.

A submenu appears displaying location information for telephony.

Open dialog box, if the modem and Telephony Current Location region code do not match.

A warning dialog box is displayed if current settings for region code and telephony location are incorrect.

Modem Selection

If the computer cannot recognize the internal modem, a dialog box is displayed. Select the COM port for your modem to use.

Dialing Properties

Select this item to display the dialing properties.

> ***CAUTION:*** *If you are using the computer in Japan, technical regulations described in the Telecommunications Business Law require that you select Japan region mode. It is illegal to use the modem in Japan with any other selection.*

Connecting

To connect the internal modem cable, follow the steps below:

1. Plug one end of the modular cable into the modem jack.
2. Plug the other end of the modular cable into a telephone jack.

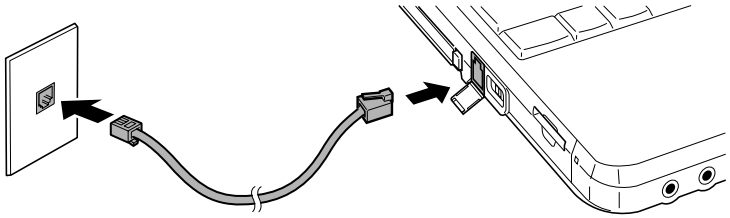


Figure 4-16 Connecting the internal modem

> ***CAUTION:*** *Do not pull on the cable or move the computer while the cable is connected.*
>
> ***NOTE:*** *If you use a storage device such as a CD-ROM drive or HDD connected to a 16-bit PC card, you might experience the following modem problems:*
>
> *1. Modem speed is slow or communication is interrupted.*
> *2. Skip may occur in sound.*

Disconnecting

To disconnect the internal modem cable, follow the steps below:

1. Pinch the lever on the connector in the telephone jack and pull out the connector.
2. Disconnect the cable from the computer in the same manner.

Cleaning the computer

To help ensure long, trouble-free operation, keep the computer free of dust and use care with liquids around the computer.

- Be careful not to spill liquids into the computer. If the computer does get wet, turn the power off immediately and let the computer dry completely before you turn it on again.
- Clean the computer using a slightly damp (with water) cloth. You can use glass cleaner on the display. Spray a small amount of cleaner on a soft, clean cloth and wipe the screen gently with the cloth.

  CAUTION: *Never spray cleaner directly onto the computer or let liquid run into any part of it. Never use harsh or caustic chemical products to clean the computer.*

Moving the computer

The computer is designed for rugged durability. However, a few simple precautions taken when moving the computer will help insure trouble-free operation.

- Turn off the computer. Do not carry the computer with power on or in stand by state. Do not carry the computer while DISK LED is glowing.
- Do not expose the computer with rapid temperature change (such as the case to bring the PC from cold outside into warm room).
  When rapid temperature change is unavoidable, turn on the computer after a couple of hours.
- Remove all external peripheral devices and their connection cables from the computer before carrying. If an optical disk is inserted in an optical disk drive, eject it.
- Do not drop the computer nor apply excessive impact on the computer. Do not leave the computer in an automobile where the computer is exposed to direct sunbeam.

- Close the display panel when carrying.
- Do not put the computer in Tablet mode in a bag.

Heat dispersal

To protect from overheating, the CPU has an internal temperature sensor. If the computer's internal temperature rises to a certain level, the cooling fan is turned on or the processing speed is lowered. You can select whether to control the CPU temperature by turning on the fan first, then if necessary, lowering the CPU speed. Or, by lowering the CPU speed first, then if necessary, turning on the fan. Use the *Cooling Method* item of the *Power Save Mode* window in TOSHIBA Power Saver.

Maximum performance	Turn on the fan first, then if necessary, lower the CPU processing speed.
Performance	Use a combination of the fan and lowering the CPU processing speed.
Battery optimized	Lower the CPU processing speed first, then if necessary turn on the fan.

When the CPU temperature falls to a normal range, the fan is turned off and the CPU operation returns to standard speed.

> ***NOTE:*** *If the CPU temperature reaches an unacceptably high level with either setting, the system automatically shuts down to prevent damage. Data in memory will be lost.*

The Keyboard

The computer's keyboard layouts are compatible with a 101/102-key enhanced keyboard. By pressing some keys in combination, all the 101/102-key keyboard functions can be executed on the computer.

The number of keys on your keyboard depends on which country/region's keyboard layout your computer is configured with. Keyboards for numerous languages are available.

There are five types of keys: typewriter keys, keypad overlay, function keys, soft keys and cursor control keys.

Typewriter keys

The typewriter keys, produce the upper- and lowercase letters, numbers, punctuation marks, and special symbols that appear on the screen.

There are some differences, however, between using a typewriter and using a computer keyboard:

- Letters and numbers produced in computer text vary in width. Spaces, which are created by a "space character," may also vary depending on line justification and other factors.
- The lowercase l (el) and the number 1 (one) are not interchangeable on computers as they are on a typewriter.
- The uppercase O (oh) and the 0 (zero) are not interchangeable.
- The **Caps Lock** function key locks only the alphabetic characters in uppercase while the shift lock on a typewriter places all keys in the shifted position.
- The **Shift** keys, the **Tab** key, and the **BkSp** (backspace) key perform the same function as their typewriter counterparts but also have special computer functions.

F1 … F12 function keys

The function keys, not to be confused with **Fn**, are the 12 keys at the top of your keyboard. These keys are dark gray, but function differently from the other dark gray keys.

F1 through **F12** are called function keys because they execute programmed functions when pressed. Used in combination with the **Fn** key, keys marked with icons execute specific functions on the computer. See the section, *Soft keys: Fn key combinations*, in this chapter. The function executed by individual keys depends on the software you are using.

Soft keys: Fn key combinations

The **Fn** (function) is unique to TOSHIBA computers and is used in combination with other keys to form soft keys. Soft keys are key combinations that enable, disable or configure specific features.

> ***NOTE:*** *Some software may disable or interfere with soft-key operations. Soft-key settings are not restored by the Resume feature.*

Emulating keys on enhanced keyboard

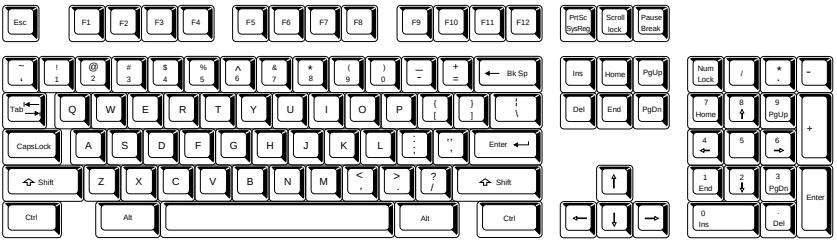
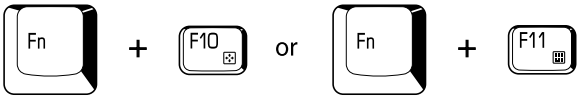


Figure 5-1 A 101-key enhanced keyboard layout

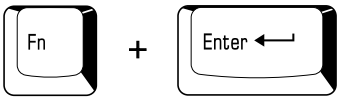
The keyboard is designed to provide all the features of the 101-key enhanced keyboard, shown in figure 5-1. The 101/102-key enhanced keyboard has a numeric keypad and scroll lock key. It also has additional **Enter** and **Ctrl** keys to the right of the main keyboard. Since the keyboard is smaller and has fewer keys, some of the enhanced keyboard functions must be simulated using two keys instead of one on the larger keyboard.

Your software may require you to use keys that the keyboard does not have. Pressing the **Fn** key and one of the following keys simulates the enhanced keyboard's functions.

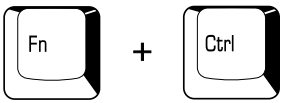


Press **Fn + F10** or **Fn + F11** to access the integrated keypad. When activated, the keys with gray markings on the side face become numeric keypad keys (**Fn + F11**) or cursor control keys (**Fn + F10**). Refer to the *Keypad overlay* section in this chapter for more information on how to operate these keys. The power on default for both settings is off.

Press **Fn** + **F12** (**ScrLock**) to lock the cursor on a specific line. The power on default is off.



Press **Fn** + **Enter** to simulate **Enter** on the enhanced keyboard's numeric keypad.



Press **Fn** + **Ctrl** to simulate the enhanced keyboard's right **Ctrl** key.

Hotkeys

Hotkeys (**Fn** + another key) let you enable or disable certain features of the computers.

Sound mute: Pressing **Fn** + **Esc** in a Windows environment turns sound on or off. When you press these hotkeys, the current setting will be displayed as an icon.

Instant security: Press **Fn** + **F1** to blank the screen to prevent others from accessing your data. To restore the screen and original settings, press any key or press the Touch Pad. If a screensaver password is registered, a dialog box will appear. Enter the screensaver password and click **OK**. If no password is set, the screen will be restored when you press any key or press the Touch Pad.

Power save mode: Pressing **Fn** + **F2** changes the power save mode.

If you press **Fn** + **F2**, the Power Save Mode is displayed in a dialog box. Continue holding down **Fn** and press **F2** again to change the setting. You can also change this setting through the *Plugged in* or *Running on batteries* item of the *Power Saver Properties* window in Power Saver.

Standby: When you press **Fn** + **F3**, the computer can enter Standby. To avoid entering Standby unexpectedly, a dialog box appears for verification. However, if you check the checkbox in the dialog box, it will not appear from the next time.

Hibernation: When you press **Fn** + **F4**, the computer can enter Hibernation. To avoid entering Hibernation unexpectedly, a dialog box appears for verification. However, if you check the checkbox in the dialog box, it will not appear from the next time.

Display selection: Press **Fn** + **F5** to change the active display device. When you press these hot keys a dialog box appears. Only selectable devices will be displayed. Hold down **Fn** and press **F5** again to change the device. When you release **Fn** and **F5**, the selected device will change. If you hold down the keys for three seconds the selection will return to **LCD**.

LCD Display Brightness: Pressing **Fn** + **F6** decreases the LCD display brightness in increments. When you press these hotkeys, the current setting will be displayed for two seconds by a pop-up icon. You can also change this setting through the *Monitor brightness* item of the *Power Save Mode* window in Power Saver.

LCD Display Brightness: Pressing **Fn** + **F7** increases the LCD display brightness in increments. When you press these hotkeys, the current setting will be displayed for two seconds by a pop-up icon. You can also change this setting through the *Monitor brightness* item of the *Power Save Mode* window in Power Saver.

> ***NOTE:*** *You cannot change the display brightness for about 18 seconds after the LCD turns on. To protect display quality, the brightness level is set at the maximum value.*

Wireless setting: If your computer has both Bluetooth and wireless LAN functions, you can press **Fn** + **F8** to select which type of wireless communication you want to use. When you press these hotkeys, a dialog box will appear. Continue holding down **Fn** and press **F8** to change the setting. If wireless communication is turned off, **Disabled Wireless Communication Switch** will be displayed.

> ***NOTE:*** *If no wireless communication device is installed, no dialog box will appear.*

Touch Pad: Pressing **Fn** + **F9** enables or disables the Touch Pad function. When you press those hotkeys, the current setting will change and be displayed as an icon.

Fn Sticky key

You can use the TOSHIBA Accessibility Utility to make the **Fn** key sticky, that is, you can press it once, release it, and they press an "**F number**" key.

Windows special keys

The keyboard provides two keys that have special functions in Windows : one activates the **Start** menu and the other has the same function as the secondary mouse button.

This key activates the Windows **Start** menu.

This key has the same function as the secondary mouse button.

Keypad overlay

Your computer's keyboard does not have an independent numeric keypad, but its numeric keypad overlay functions like one.

The keys in the center of the keyboard with white letters make up the numeric keypad overlay. The overlay provides the same functions as the numeric keypad on the 101/102-key enhanced keyboard in figure 5-2.

Turning on the overlays

The numeric keypad overlay can be used for numeric data input or cursor and page control.

Arrow mode

To turn on the Arrow mode, press **Fn** + **F10**. The Arrow mode indicator lights. Now try cursor and page control using the keys shown in figure 5-2. Press **Fn** + **F10** again to turn off the overlay.

Numeric mode

To turn on the Numeric mode, press **Fn + F11**. The Numeric mode indicator lights. Now try numeric data entry using the keys in figure 5-2. Press **Fn + F11** again to turn off the overlay.

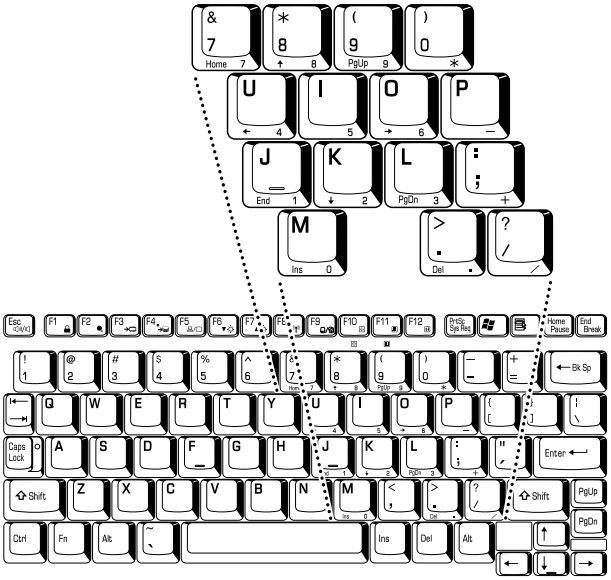


Figure 5-2 The numeric keypad overlay

Temporarily using normal keyboard (overlay on)

While using the overlay, you can temporarily access the normal keyboard without turning off the overlay:

1. Hold **Fn** and press any other key. All keys will operate as if the overlay were off.
2. Type uppercase characters by holding **Fn + Shift** and pressing a character key.
3. Release **Fn** to continue using the overlay.

Temporarily using overlay (overlay off)

While using the normal keyboard, you can temporarily use the keypad overlay without turning it on:

1. Press and hold down **Fn**.
2. Check the keyboard indicators. Pressing **Fn** turns on the most recently used overlay. If the Numeric mode indicator lights, you can use the overlay for numeric entry. If the Arrow mode indicator lights, you can use the overlay for cursor and page control.
3. Release **Fn** to return to normal keyboard operation.

Temporarily changing modes

If the computer is in **Numeric mode**, you can switch temporarily to **Arrow mode** by pressing a shift key.

If the computer is in **Arrow mode**, you can switch temporarily to **Numeric mode** by pressing a shift key.

Generating ASCII characters

Not all ASCII characters can be generated using normal keyboard operation. But, you can generate these characters using their ASCII codes.

With the overlay on:

1. Hold down **Alt**.
2. Using the overlay keys, type the ASCII code.
3. Release **Alt**, and the ASCII character appears on the display screen.

With the overlay off:

1. Hold **Alt** + **Fn**.
2. Using the overlay keys, type the ASCII code.
3. Release **Alt** + **Fn**, and the ASCII character appears on the display screen.

Chapter 6

Power and Power-Up Modes

The computer's power resources include the AC adaptor and internal batteries. This chapter gives details on making the most effective use of these resources including charging and changing batteries, tips for saving battery power, and power up modes.

Power conditions

The computer's operating capability and battery charge status are affected by the power conditions: whether an AC adaptor is connected, whether a battery is installed and what the charge level is for the battery.

Table 6-1 Power conditions

		Power on	Power off (no operation)
AC adaptor connected	Battery fully charged	• Operates • LED: **Battery** green **DC IN** green	• LED: **Battery** green **DC IN** green
	Battery partially charged or no charge	• Operates • Quick charge • LED: **Battery** orange **DC IN** green	• Quick charge • LED: **Battery** orange **DC IN** green
	No battery installed	• Operates • No charge • LED: **Battery** off **DC IN** green	• No charge • LED: **Battery** off **DC IN** green

Table 6-1 Power conditions continued

		Power on	Power off (no operation)
AC adaptor not connected	Battery charge is above low battery trigger point	• Operates • LED: **Battery** off **DC IN** off	
	Battery charge is below low battery trigger point	• Operates • LED: **Battery** flashes in orange **DC IN** off	
	Battery charge is exhausted	Computer goes into resume mode and shuts down	
	No battery installed	• Cannot operate • LED: **Battery** off **DC IN** off	

Power indicators

The **Battery, DC IN** and **Power** indicators on the system indicator panel alert you to the computer's operating capability and battery charge status.

Battery indicators

Check the **Battery** indicator to determine the status of the battery. The following indicator lights indicate the battery status:

Flashing in orange	The battery charge is low. The AC adaptor must be connected to recharge the battery.
Orange	Indicates the AC adaptor is connected and charging the battery.
Green	Indicates the AC adaptor is connected and the battery is fully charged.
No light	Under any other conditions, the indicator does not light.

NOTE: *If the battery becomes too hot while it is being charged, the charge will stop and the battery indicator will go out. When the battery's temperature falls to a normal range, charging will resume. This event occurs regardless of whether the power to the computer is on or off.*

DC IN indicator

Check the **DC IN** indicator to determine the power status with the AC adaptor connected:

Green	Indicates the AC adaptor is connected and supplying proper power to the computer.
Flashing in orange	Indicates a problem with the power supply. Plug the AC adaptor into another outlet. If it still does not operate properly, contact TOSHIBA dealer. Refer to Chapter 9, *Trouble shooting TOSHIBA support*.
No light	Under any other conditions, the indicator does not light.

Power indicator

Check the **Power** indicator to determine the power status.

Green	Indicates power is being supplied to the computer and the computer is turned on.
Blinking in orange	Indicates the power was turned off while the computer was in Resume mode. The indicator turns on for one second and turns off for two seconds.
No light	Under any other conditions, the indicator does not light.

Battery types

The computer has two types of batteries:

- Battery Pack
- Real Time Clock (RTC) battery

Battery Pack

When the AC power cord is not connected, the computer's main power source is a removable lithium-ion Battery Pack, also referred to in this manual as the main battery. You can purchase Battery Packs for extended use of the computer away from an AC power source.

CAUTIONS: *1. The battery pack is a lithium-ion battery, which can explode if not properly replaced, used, handled or disposed of. Dispose of the battery as required by local ordinances or regulations. Use only battery recommended by TOSHIBA as replacements.*

2. Do not remove the battery pack while the computer is in Standby mode. Data is stored in RAMs, so if the computer loses power it will be lost. When the computer is powered off in Standby mode, and the AC adaptor is not connected, the battery pack supplies power to maintain data and program in memory. If the battery pack is completely discharged, Standby mode does not function and the computer loses all data in memory.

To ensure that the Battery Pack maintains its maximum capacity, operate the computer on battery power at least once a month until the Battery Pack is fully discharged. Refer to *Extending battery life* in this chapter for procedures. If the computer is continuously operated on AC power, through an AC adaptor for an extended period, more than a month, the battery may fail to retain a charge. It may not function efficiently over the expected life of the battery and the Battery LED may not indicate a low-battery condition.

Real time clock battery

The Real Time Clock (RTC) battery provides power for the internal real time clock and calendar. It also maintains the system configuration.

The RTC battery is charged when the power of the computer is on.

If the RTC battery becomes completely discharged, the system loses this data and the real time clock and calendar stop working. The following message appears when you turn on the power:

```
*** Bad RTC battery ***
Check system. Then press [F1] key . . . . . .
```

CAUTION: *The computer's RTC battery is a lithium ion battery and should be replaced only by your dealer or by a TOSHIBA service representative. The battery can explode if not properly replaced, used, handled or disposed of. Dispose of the battery as required by local ordinances or regulations.*

Care and use of the Battery Pack

The Battery Pack is a vital component of portable computing. Taking proper care of it will help ensure longer operating time on battery power as well as a longer life for your Battery Pack. Follow the instructions in this section carefully to ensure safe operation and maximum performance.

Safety precautions

Mishandling of batteries can cause death, serious injury or property damage. Carefully observe the following advisories:

Danger: Indicates an imminently hazardous situation, which could result in death or serious injury, if you do not follow instructions.

Warning: Indicates a potentially hazardous situation, which could result it death or serious injury, if you do not follow instructions.

Caution: Indicates a potentially hazardous situation, which if not avoided, may result in moderate or minor injury of property damage.

Note: Provides important information.

Danger

1. Never try to dispose of the battery pack by burning or expose it to a heating device such as a microwave oven. The battery pack could explode and cause bodily injury.
2. Never try to disassemble, repair or otherwise tamper with a battery pack. The battery pack will overheat and ignite. Leakage of caustic alkaline solution or other electrolytic substances will cause fire or injury, possibly resulting in death or serious injury.
3. Never short-circuit the battery pack by contacting the terminals with a metal object. A short-circuit can cause fire or otherwise damage the battery pack and possibly cause injury. To avoid accidental short-circuit, always wrap the battery pack in plastic and cover the terminals with electrical tape when storing or disposing of the battery pack.
4. Never puncture the battery pack with a nail or other sharp object. Never strike it with a hammer or other object. Never step on it.
5. Never try to charge the battery pack in any manner other than that described in the user's manual. Never connect the battery pack to a plug socket or to a automobile's cigarette lighter socket. It may rupture or ignite.
6. Use only the battery pack supplied with the computer or other device or a battery pack approved by the computer or device's manufacture. Battery packs have different voltages and terminal polarities. Use of an improper battery could cause smoke, fire or rupture of the battery pack.

7. Never subject a battery pack to heat, such as storage near a heat source. Exposure to heat can cause the battery pack to ignite, explode or leak caustic liquid and cause death or serious injury. It could also fail or malfunction causing data loss.
8. Never expose the battery pack to abnormal shock, vibration or pressure. The battery pack's internal protective device will fail, causing it to overheat, explode, ignite or leak caustic liquids possibly resulting in death or serious injury.
9. Never let a battery pack become wet. A wet battery pack will overheat, ignite or rupture possibly resulting in death or serious injury.

Warning

1. Never allow caustic electrolyte fluid leaked from a battery pack to contact your eyes, skin or clothing. If caustic electrolyte fluid should contact your eyes, immediately wash your eyes with large amounts of running water and seek medical attention, to help prevent eye damage. It electrolyte fluid should contact your skin immediately wash it under running water to prevent rash. If it contacts your clothes, promptly remove them to prevent the fluid from contacting your skin or eyes.
2. Immediately turn off the power, disconnect the AC adapter and remove the battery if any of the following events are observed in the battery pack: offensive or unusual odor, excessive heat, discoloration or deformation. Never use the computer again until it has been checked by a TOSHIBA service provider. It might generate smoke or fire, or the battery pack might rupture.
3. Make sure the battery is securely installed in the computer before attempting to charge the battery pack. Improper installation could generate smoke or fire, or cause the battery pack to rupture.
4. Keep the battery pack out or reach of infants and children. It can cause injury.

Caution

1. Never continue to use a battery pack after its recharging capacity has become impaired, or after the display of a warning message indicating that the battery pack's power is exhausted. Continued use of an exhausted or impaired battery pack could cause the loss of data.
2. Never dispose of battery packs with normal trash. Bring them to your TOSHIBA dealer or to another recycling center to save resources and prevent environmental damage. Cover the terminals with electrical tape to prevent short-circuits, which could cause the battery pack to ignite or rupture
3. Use only battery pack recommended by TOSHIBA as replacements.
4. Always make sure the battery pack is installed correctly and securely. Otherwise, a battery pack could fall out and possibly cause injury.
5. Charge the battery pack only in an ambient temperature between 5 and 35 degrees Celsius. Otherwise, the electrolyte solution might leak, battery pack performance might deteriorate and the battery life might be shortened.
6. Be sure to monitor the remaining battery power. If the battery pack and real time clock battery discharge completely, Standby and Suspend will not function and data in memory will be lost. Also, the computer might register an incorrect time and date. In this case, connect the AC adaptor to recharge the batteries
7. Never install or remove the battery pack without first turning off the power and disconnecting the AC adaptor. Never remove the battery pack while the computer is in Suspend of Standby mode. Data will be lost.

Note

1. Never remove the battery pack while the Wake-up on LAN function is enabled. Data will be lost. Before you remove a battery pack, disable the Wake-up on LAN function.
2. To ensure the battery pack maintains maximum capacity, operate the computer on battery power once a week until the battery pack is fully discharged. Refer to the section *Extending battery life* in this chapter for procedures. If the computer is continuously operated on AC power for an extended period, more than a week, the battery might fail to retain a charge. It might not function efficiently over the expected life of the battery pack and the **Battery** indicator might not indicate a low-battery condition.
3. After the battery pack is charged, avoid leaving the AC adaptor connected and the computer turned off for more than a few hours at a time. Continuing to charge a fully-charged battery pack can damage the battery.

Charging the batteries

When the power in the Battery Pack becomes low, the **Battery** indicator flashes in orange indicating that only a few minutes of battery power remain. If you continue to use the computer while the **Battery** indicator flashes, the computer enables Resume mode (so you do not lose data) and automatically turns off.

You must recharge a Battery Pack when it becomes discharged.

Procedures

To recharge a Battery Pack while it is installed in the computer, connect the AC adaptor to the **DC IN** socket and plug the other end into a working outlet.

The **Battery** indicator glows in orange when the battery is being charged.

> ***CAUTION:*** *Use only the computer connected to an AC power source or the optional TOSHIBA Battery charger to charge the Battery Pack. Do not attempt to charge the Battery Pack with any other charger.*

Time

The following table shows the approximate time required to fully charge a discharged battery.

	Charging time (hours)	
Battery type	**Power on**	**Power off**
Battery Pack	8.5 (approx.)	2.5 (approx.)
RTC battery	8.0	Doesn't charge

> ***NOTE:*** *The charging time when the computer is on is affected by ambient temperature, the temperature of the computer and how you use the computer. If you make heavy use of external devices, for example, the battery might scarcely charge at all during operation. Refer also to the section* *Maximizing battery operating time**.*

Battery charging notice

The battery may not charge right away under the following conditions:

- The battery is extremely hot or cold. If the battery is extremely hot, it might not charge at all. Also, to ensure the battery charges to its full capacity, charge the battery at room temperature of 10° to 30°C (50° to 86°F).
- The battery is nearly completely discharged. Leave the AC adaptor connected for a few minutes and the battery should begin charging.

The **Battery** indicator may show a rapid decrease in battery operating time when you try to charge a battery under the following conditions:

- The battery has not been used for a long time.
- The battery has completely discharged and been left in the computer for a long time.
- A cool battery is installed in a warm computer.

In such case, follow the steps below.

1. Fully discharge the battery by leaving it in the computer with the power on until the power automatically shuts off.
2. Plug in the AC adaptor.
3. Charge the battery until the **Battery** indicator glows green.

Repeat the steps two or three times until the battery recovers normal capacity.

> ***NOTE:*** *Leaving the AC adaptor connected will shorten battery life. At least once a month, run the computer on battery power until the battery is fully discharged, then recharge the battery.*

Monitoring battery capacity

Remaining battery power can be monitored in the *Power Save Modes* window in Power Saver of Windows.

> ***NOTES:*** *1. Wait at least 16 seconds after turning on the computer before trying to monitor the remaining operating time. The computer needs this time to check the battery's remaining capacity and to calculate the remaining operating time, based on the current power consumption rate and remaining battery capacity. The actual remaining operating time may differ slightly from the calculated time.*

2. *With repeated discharges and recharges, the battery's capacity will gradually decrease. Therefore, an often used, older battery will not operate for as long as a new battery even when both are fully charged. In this case, TOSHIBA Power Saver will indicate a 100% charge for both the old and new battery, but the displayed estimated time remaining will be shorter for the older battery.*

Maximizing battery operating time

A battery's usefulness depends on how long it can supply power on a single charge.

How long the charge lasts in a battery depends on:

- How you configure the computer, for example, whether you enable battery-power saving options. The computer provides a battery save mode to conserve battery power. This mode has the following options:
  - Processing speed
  - Display auto off
  - HDD auto off
  - System auto off
  - LCD Brightness
- How often and how long you use the hard disk and the diskette drive.
- How much charge the battery contained to begin with.
- How you use optional devices, such as a PC card, to which the battery supplies power.
- Enabling Resume mode conserves battery power if you are frequently turning the computer off and on.
- Where you store your programs and data.
- Closing the display when you are not using the keyboard saves power.
- Operating time decreases at low temperatures.
- The condition of the battery terminals. Make sure the battery terminals stay clean by wiping them with a clean dry cloth before installing the Battery Pack.

Retaining data with power off

When you turn off your computer with fully charged batteries, the batteries retain data for the following approximate time periods:

Battery pack (3600 mAh)	5 days (approx. in Resume mode) 60 days (approx. in Boot mode)
RTC battery	1 month

Extending battery life

To maximize the life of your Battery Pack:

- ❑ At least once a month, disconnect the computer from a power source and operate it on battery power until the Battery Pack fully discharges. Before doing so, follow the steps below.
  1. Turn off the computer's power.
  2. Disconnect the AC adaptor and turn on the computer's power. If it does not turn on go to step 4.
  3. Operate the computer on battery power for five minutes. If the Battery Pack has at least five minutes of operating time, continue operating until the Battery Pack is fully discharged. If the **Battery** indicator flashes or there is some other warning to indicate a low battery, go to step 4.
  4. Connect the AC adaptor to the computer and the power cord to a power outlet. The **DC IN** indicator should glow in green, and the **Battery** should glow in orange to indicate that the Battery Pack is being charged. If the **DC IN** indicator does not glow, power is not being supplied. Check the connections for the AC adaptor and power cord.
  5. Charge the Battery Pack until the **Battery** indicator glows in green.
- ❑ If you have spare Battery Packs, rotate their use.
- ❑ If you will not be using the system for an extended period, more than one month, remove the Battery Pack.
- ❑ Disconnect the AC adaptor when the battery is fully charged. Overcharging makes the battery hot and shortens life.
- ❑ If you are not going to use the computer for more than eight hours, disconnect the AC adaptor.
- ❑ Store spare Battery Packs in a cool dry place out of direct sunlight.

Replacing the Battery Pack

When the Battery Pack reaches the end of its operating life you will need to install a new one. The life of the Battery Pack is generally about 500 recharges. If the **Battery** indicator flashes in orange shortly after fully recharging the battery, the Battery Pack needs to be replaced.

You might also replace a discharged Battery Pack with a charged spare when you are operating your computer away from an AC power source. This section explains how to remove and install Battery Packs.

> ***NOTE:*** *Place a mat beneath the computer to prevent making a scratch on the lid when replacing the Battery pack. Avoid the mat that generates static electricity.*

Removing the Battery Pack

To replace a discharged Battery Pack, follow the steps below.

> ***CAUTIONS:*** *1. When handling battery packs, be careful not to short circuit the terminals. Also do not drop, hit or otherwise apply impact; do not scratch or break the casing and do not twist or bend the battery pack*
>
> *2. Do not remove the battery pack while the computer is in Standby mode. Data is stored in RAM, so if the computer loses power it will be lost.*
>
> *3. In Hibernation mode, data will be lost if you remove the battery or disconnect the AC adaptor before the save is completed. Wait for the* **Disk** *indicator to go out.*

1. Save your work.
2. Turn the computer's power off. Make sure the **Power** indicator is off.
3. Remove all cables connected to the computer.
4. Turn the computer upside down with the front side of the computer facing to you.
5. Release the battery lock.
6. Confirm that the Battery lock indicator shows red.
7. Push the battery release lever to the left to free the battery pack for removal.

CAUTION: *For environmental reasons, do not throw away a spent Battery Pack. Please return spent Battery Packs to your TOSHIBA dealer.*

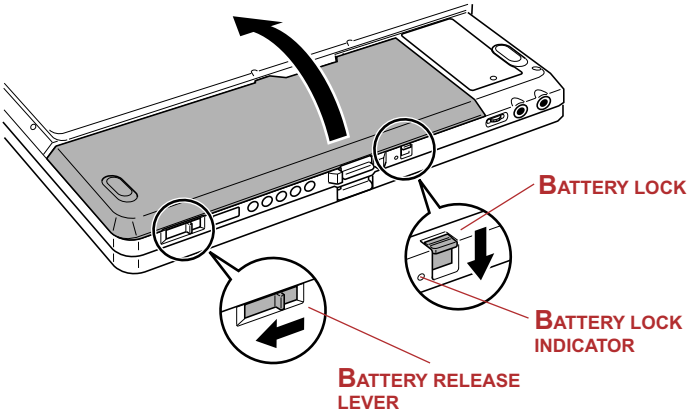


Figure 6-1 Removing the Battery Pack (1)

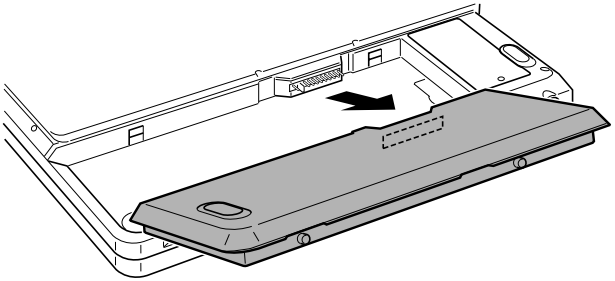


Figure 6-2 Removing the Battery Pack (2)

Installing the Battery Pack

To install a Battery Pack, follow the steps below.

CAUTION: *The Battery Pack is a lithium-ion battery, which can explode if not properly replaced, used, handled or disposed of. Dispose of the battery as required by local ordinances or regulations. Use only battery recommended by TOSHIBA as replacements.*

1. Be sure the computer's power is off and all cables are disconnected.
2. Insert the Battery Pack.
3. Secure the battery lock.

   CAUTION: *Confirm the battery lock indicator is not red. Then turn the computer.*

   Red: unlocked No color: locked

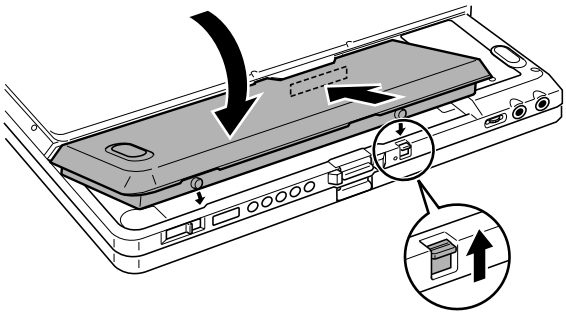


Figure 6-3 Installing the Battery Pack

Starting the computer by password

If you registered a password as user, you must enter it to start the computer. For more information about how to set a password, refer to Chapter 7, *HW Setup and Passwords*.

To start up the computer with the password, follow these steps:

1. Turn on the power as described in Chapter 3, *Getting Started*.
2. Enter the password.
3. Press **Enter**.

> ***NOTE:*** *If you enter the password incorrectly three times in a row, the computer shuts off. In this case, you must turn the computer back on to retry password entry.*

Tablet mode

Enter your password by tapping the on-screen keyboard using the tablet pen.

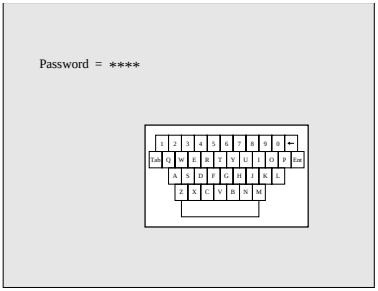


Figure 6-4 On-screen keyboard

- ❑ The beep sounds when tapping the on-screen keyboard with the tablet pen. An * (asterisk) is displayed after "Password =" and one character is input for every tapping.

> ***NOTE:*** *Register your password to the computer in the laptop mode using the standard keyboard. Refer to Chapter 7, HW Setup and Passwords, HW Setup, Password, for the detail.*

Power-up modes

The computer has the following power-up modes:

- Boot: Computer shuts down without saving data. Always save your work before you turn the computer off in boot mode.
- Hibernation: Data in memory is saved to the hard disk.
- Standby: Data is maintained in the computer's main memory.

> ***NOTE:*** *Refer also to the sections* Turning on the power *and* Turning off the power *in Chapter 3,* Getting Started.

Windows utilities

You can specify the setting in TOSHIBA Power Saver.

Hotkeys

You can use hotkeys Fn + F3 to enter Standby mode and Fn + F4 to enter Hibernation. See Chapter 5, *The Keyboard* for details.

Panel power off

You can set up your computer so that power turns off automatically when you close the display panel. When you open the panel, power turns on in Standby or Hibernation mode but not in boot mode.

However, when the system is running in the tablet mode, it does not shut down even if the display panel is closed.

> ***NOTE:*** *If the panel power off function is enabled and you use Shut down Windows, do not close the display until the shut down function is completed.*

System Auto Off

This feature turns the system off automatically if the computer is not used for a set duration. The system shuts down in Standby mode or Hibernation mode in Windows.

However, when the system is running in the tablet mode, it does not shut down even if the display panel is closed.

HW Setup and Passwords

This chapter explains how to use TOSHIBA HW Setup program to configure your computer and how to set passwords.

HW Setup

TOSHIBA HW Setup lets you configure settings for display, CPU, boot priority, Keyboard, USB, LAN, general, password and device configuration.

> ***NOTE:*** *If the supervisor password is set, access to the TOSHIBA HW Setup program can be prevented when the user password is used to log on to the computer.*

Accessing HW Setup

To run HW Setup, click **start**, click **Control Panel**, click **Printers** and **Other Hardware** and select **TOSHIBA HW Setup**.

HW Setup window

The HW Setup window contains the following tabs: display, CPU, boot priority, Keyboard, USB, LAN, general, password, device config.

General

This window displays the BIOS version and contains two buttons: **Default** and **About**.

Default	Return all HW Setup values to the factory settings.
About	Display the HW Setup version..

Setup

This field displays **BIOS Version** and date.

Password

User Password

This option allows you to set or reset the user password for power on.

Not Registered	Change or remove the password. (Default)
Registered	Set the password. A dialogue box will appear to let you set the password.

To enter a user password:

1. Select **Registered** to display the following prompt:

   Enter Password:

2. Enter a password of up to 10 characters. The character string you enter is displayed as a string of asterisks. For example, if you enter a password consisting of four characters, the display is shown as:

   Enter Password: **

   ***NOTE:** If you click the* **OK** *button before entering the password,* **Not registered** *will appear on the display.*

3. Click the **OK** button. The following message appears, allowing you to verify the password.

   Verify Password:

4. If character strings match, the password is registered and the display changes to:

   Registered

   If they do not match, the following message appears. You must repeat from step 1.

   Entry Error!!!

To delete a user password:

1. Select **Not Registered** to display the following prompt:

   Enter Password:

2. Enter the currently registered password. The character string you enter is displayed as a string of asterisks.

   Enter Password: **

   ***NOTE:** If you click the* **OK** *button before entering the password,* **Registered** *will appear on the display.*

3. Click the **OK** button. If the character string you enter matches the registered password, the password option is reset and the display changes to:

   Not registered

   If they do not match, the following message appears. You must repeat step 1.

   Incorrect Password!!!

   ***NOTE:** If you enter the password incorrectly three times, the screen will display:*

   Sorry, access denied!!! Powering off your machine then powering it back on again are required to regain access.

   You will not be able to access the password option in the HW Setup. In this case you must turn the power off and back on to retry the procedure.

4. Follow the same procedures described in the earlier section, *How to set the password*, to set a new user password.

Refer to the *Supervisor password* section later in this chapter for details on setting the supervisor password.

Device Config

Device Configuration

This option lets you set the device configuration.

All Devices	BIOS sets all devices.
Setup by OS	Operating system sets devices that it can control. (Default)

Display

This tab lets you customize your computer's display settings for either the internal LCD screen or for an external monitor.

Power On Display

Lets you set the display to be used when the computer is booted.

Auto-Selected	Selects an external monitor if one is connected. Otherwise, it selects the internal LCD. (Default)
Simultaneous	Selects both the internal LCD and external monitor for simultaneous display.

CPU

Dynamic CPU Frequency Mode

This option lets you choose from the following settings:

Dynamically Switchable	CPU power consumption and clock speed automatic switching function is enabled. When the computer is in use, CPU operation is automatically switched when necessary. (Default)
Always High	CPU power consumption and clock speed automatic switching function is disabled. The CPU always runs at its fastest speed.
Always Low	CPU power consumption and clock speed automatic switching function is disabled. The CPU always runs at low power consumption and low speed.

Boot Priority

Boot Priority Options

This option sets the priority for booting the computer. Select from the following settings:

HDD –> FDD –> CD-ROM –> LAN	The computer looks for bootable files in the following order: HDD, diskette drive, CD-ROM* and LAN. (Default)
FDD –> HDD –> CD-ROM –> LAN	The computer looks for bootable files in the following order: diskette drive, HDD, CD-ROM* and LAN.
HDD –> CD-ROM –> LAN –> FDD	The computer looks for bootable files in the following order: HDD, CD-ROM*, LAN and diskette drive.
FDD –> CD-ROM –> LAN –> HDD	The computer looks for bootable files in the following order: diskette drive, CD-ROM*, LAN and HDD.
CD-ROM –> LAN –> HDD –> FDD	The computer looks for bootable files in the following order: CD-ROM*, LAN, HDD, diskette drive.
CD-ROM –> LAN –> FDD –> HDD	The computer looks for bootable files in the following order: CD-ROM*, LAN, diskette drive and HDD.

***** The CD-ROM is available only with the optional optical disk drive.

You can override the settings and manually select a boot device in one of the following two ways.

- Press one of the following keys while the computer is booted:

  U Selects the USB diskette drive.

  N Selects the Network.

  1 Selects the primary HDD.

  P Selects the PC card HDD.

  C Selects the CD-ROM*.

This procedure does not affect the settings.

❑ Use hot keys.

1. Hold down **F12** and boot the computer.
2. The following menu will be displayed with the following icons: Built-in HDD, CD-ROM, FDD, Network (LAN), PCA (ATA) card boot.

NOTE: *A bar will appear only under the selected device.*

3. Use the left/right cursor keys to highlight the boot device you want and press **Enter**.

NOTES: *1. If a supervisor password is set, the menu above does not appear when you use the user password to start the computer.*

2. The selection method above does not change the boot priority settings in HW Setup.

3. If you press a key other than one of those above or if the selected device is not installed, the system will boot according to the current setting in HW Setup.

Network Boot Protocol

This feature sets the protocol to remotely boot from the network.

[PXE] Sets PXE as the protocol. (Default)

[RPL] Sets RPL as the protocol.

NOTES: *1. PC card HDD boot is supported only by the PC card slot on the computer. Support is guaranteed only for TOSHIBA PC card HDDs.*

2. When you assign a PC card HDD top priority, "PC" is not displayed. However, the PC card HDD takes the position of HDD in the Boot Priority Options list above.

Keyboard

Wake-up on Keyboard

When this feature is enabled and the computer is in Standby mode, you can turn on the computer by pressing any key. It is effective only for the internal keyboard and only when the computer is in Standby mode.

Enabled Enables the Wake-up on Keyboard.

Disabled Disables the Wake-up on Keyboard. (Default)

USB

USB KB/Mouse Legacy Emulation

Use this option to enable or disable USB KB/Mouse Legacy Emulation. If your operating system does not support USB, you can still use a USB mouse and keyboard by setting the **USB KB/Mouse Legacy Emulation** item to **Enabled**.

Enabled Enables the USB KB/Mouse Legacy Emulation. (Default)

Disabled Disables the USB KB/Mouse Legacy Emulation.

USB-FDD Legacy Emulation

Use this option to enable or disable USB-FDD Legacy Emulation.

Enabled Enables the USB-FDD Legacy Emulation. (Default)

Disabled Disables the USB-FDD Legacy Emulation.

LAN

Wake-up on LAN

This features lets the computer's power be turned on when it receives a wake-up signal from the LAN.

Enabled Enables Wake-up on LAN.

Disabled Disables Wake-up on LAN. (Default)

CAUTION: *Do not install or remove an optional memory module while Wake-up on LAN is enabled.*

NOTE: *Wake-up on LAN does not work without the AC adaptor. Leave it connected, if you are using this feature.*

Built-in LAN

Enabled	Enables built-in LAN functions. (Default)
Disabled	Disables built-in LAN functions.

Supervisor password

Refer to the readme file of the Supervisor Password Utility for instructions on setting the Supervisor Password.

The path to the readme file is **C:\Program Files\TOSHIBA\Windows Utilities\SVPWTool**. In the **SVPWTool** directory, open the **readme.htm** file.

Optional Devices

Optional devices can expand the computer's capabilities and its versatility. The following optional devices are available from your TOSHIBA dealer:

Cards/memory

- PC cards
- SD cards
- Compact Flash
- Memory module

Power devices

- Battery Pack
- Universal AC Adaptor
- Battery Charger

Peripheral devices

- USB FDD Kit
- External monitor

Other

- Security lock
- TOSHIBA tablet pen set.

PC cards

The computer is equipped with a PC card expansion slot that can accommodate one 5 mm Type II card. Any PC card that meets industry standards (manufactured by TOSHIBA or other vendor) can be installed. The slots support 16-bit PC cards, including PC card 16's multifunction card and CardBus PC cards.

CardBus supports the new standard of 32-bit PC cards. The bus provides superior performance for the greater demands of multimedia data transmission.

Installing a PC card

The PC card connector is located on the left side of the computer.

Windows' not-installed feature lets you install PC cards while the computer's power is on.

NOTES: *1. Do not install a PC card while the computer is in standby or hibernation mode. Some cards might not work properly.*

2. An HDD or CD-ROM connected to a 16-bit PC card, might affect the performance of the computer's sound system and data transmission, including slower transmission speeds and dialing errors.

To install a PC card, follow the steps below:

1. Insert the PC card.
2. Press gently to ensure a firm connection.

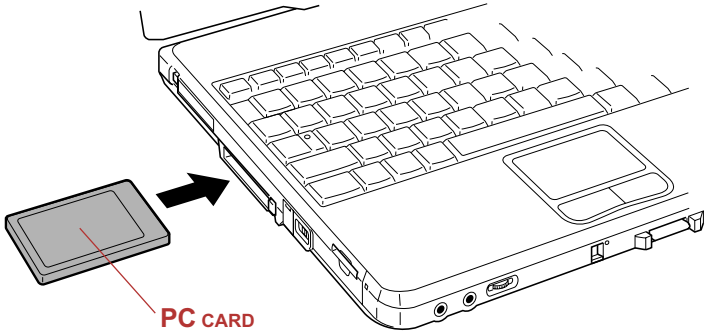


Figure 8-1 Inserting the PC card

After installing the card, refer to the card's manual and check the configuration in Windows to make sure it is appropriate for your card.

Removing a PC card

To remove the PC card, follow the steps below:

1. Click the **Safety Remove Hardware** icon on the Task Bar.
2. Click **PC card**.
3. Press the PC card eject button to extend it.
4. Press the extended eject button to pop the card out slightly.
5. Pinch the PC card and draw it out.

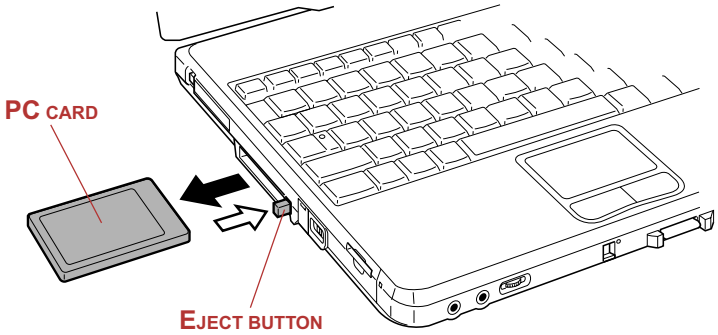


Figure 8-2 Removing the PC card

SD cards

The computer is equipped with an SD card slot that can accommodate Secure Digital flash memory cards with various capacities SD cards let you easily transfer data from devices, such as digital cameras and Personal Digital Assistants, that use SD card flash-memory. The cards have a high level of security and copy protection features.

You can use an SD card of memory module.

The slot cannot accommodate MultiMedia cards.

CAUTIONS: *1. Keep foreign objects out of the SD card slot. A pin or similar object can damage the computer's circuitry.*

2. Do not format an SD memory card in Windows, My Computer screen. It might cause that the SD memory card cannot be used by a digital camera or an audio player.

NOTE: *SD memory cards comply with SDMI (Secure Digital Music Initiative), which is a technology adapted to prevent unlawful copy of playback of digital music. For this reason, you cannot copy or playback protected material an another computer or other device. You may not use the reproduction of any copyrighted material except for your personal enjoyment.*

Installing an SD card

To install an SD card, follow the steps below.

1. Insert the SD card.
2. Press gently to ensure a firm connection.

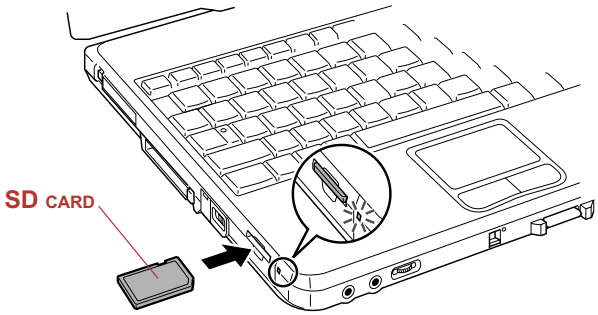


Figure 8-3 Inserting an SD card

CAUTION: *Make sure the SD card is oriented properly before you insert it.*

Removing an SD card

To remove an SD card, follow the steps below:

1. Click the **Safety Remove Hardware** icon on the Task Bar.
2. Point to **SD card** and click.
3. Push in the card and release it to pop the card out slightly.
4. Pinch the SD card and draw it out.

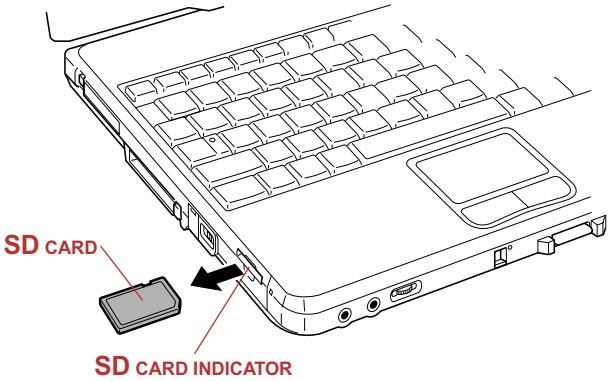


Figure 8-4 Removing an SD card

CAUTION: *Make sure the* **SD card** *indicator is out before you remove the card or turn off the computer's power. If you remove the card or turn off the power while the computer is accessing the card you may lose data or damage the card.*

SD card care

CAUTION: *Set the write-protect switch to the lock position, if you do not want to record data.*

1. Do not write in an SD card if the battery power is low. Low power could affect writing accuracy.
2. Do not remove an AD card while read/write is in progress.

3. The SD card is designed so that it can be installed only one way. Do not try to force the card into the slot.
4. Do not leave an SD card partially inserted in the slot. Press the SD card until you hear it click into place.
5. Do not twist or bend SD cards.
6. Do not expose SD cards to liquids or store in humid areas or lay media close to containers of liquid
7. After using an SD card, return it to its case.
8. Do not touch the metal part or expose it to liquids or let it get dirty.

Compact Flash

This slot accommodates Compact Flash with various memory capacities. You cannot use Compact Flash that does not conform to CFA specifications. You can also use Compact Flash I/O module other than memory module

Installing a Compact Flash module

To install a Compact Flash module, follow the steps below.

1. Remove the dummy card from the slot.
2. Insert the Compact flash into the slot.
3. Press gently to ensure a firm connection

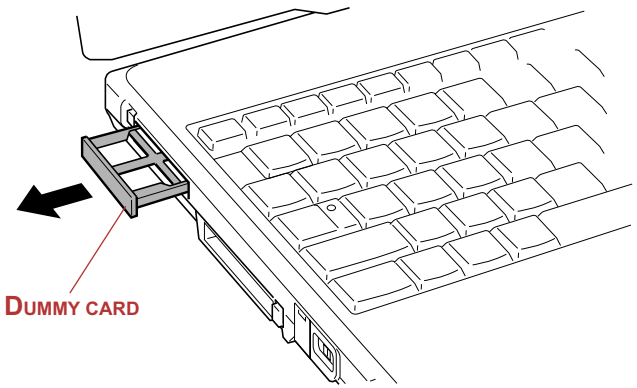


Figure 8-5 Removing the dummy card

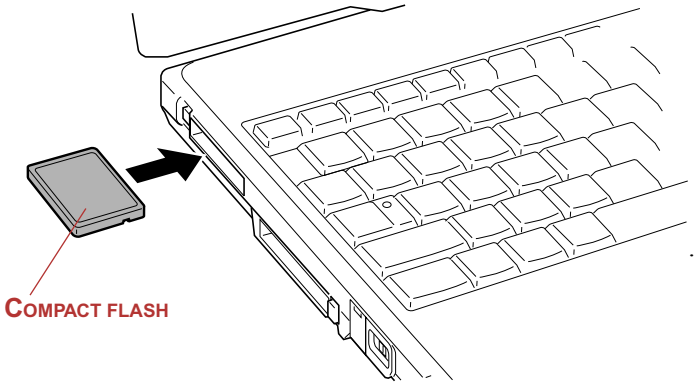


Figure 8-6 Inserting a Compact Flash module

Removing a Compact Flash module

To remove a Compact Flash, follow the steps below.

1. Right click (right button of the Touch Pad) on the Compact Flash drive's icon and select eject from the pop-up menu.
2. Press the Compact Flash eject button to extend it.
3. Press the extended eject button to pop the compact Flash out slightly.
4. Pinch and pull out the Compact Flash.
5. Insert a dummy card into the slot.

CAUTION: *Make sure the Compact Flash indicator is out before you remove the Compact Flash or turn off the computer's power. If you remove the Compact Flash or turn off the power while the computer is accessing the Compact Flash you may lose data or damage the Compact Flash.*

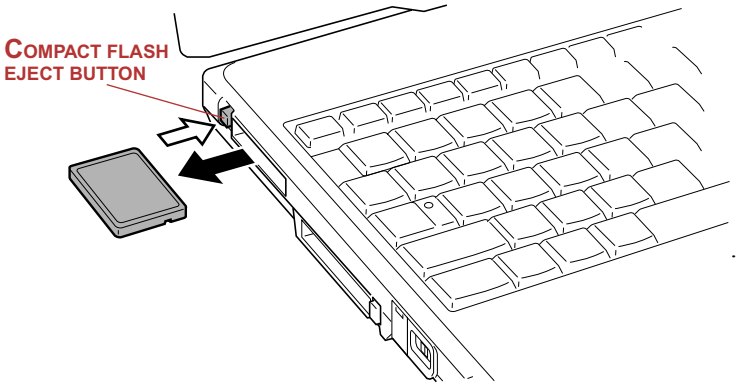


Figure 8-7 Inserting a Compact Flash module

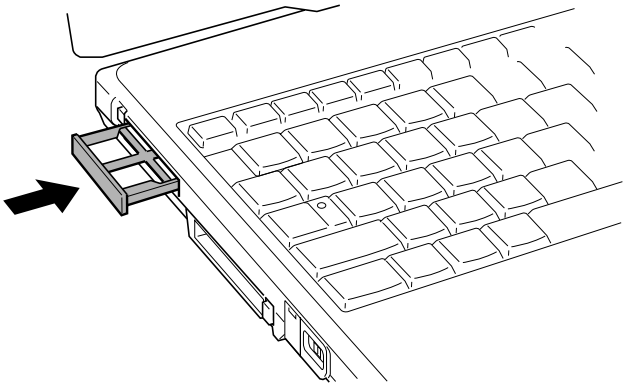


Figure 8-8 Inserting the dummy card

Memory expansion

This computer is equipped with two memory module sockets; Slot A beneath the keyboard and Slot B in the backside of the computer. You can increase the amount of RAM to 1024MB by installing an additional memory or replacing default memories with additional memories.

NOTE: *Observe the following instructions according to the model you purchased.*

- *Install an additional memory module to Slot B for the computer with vacant Slot B.*
- *You can increase the memory amount by replacing the memory module in Slot A and/or B with a memory module of larger memory amount when both Slot A and Slot B are occupied. However, replacing of memory module in Slot B is recommended because it is easier to replace the memory module in Slot B than A.*
- *It is strongly recommended to leave the replacing of memory module preinstalled in Slot A to TOSHIBA dealer because the installing or replacing of memory module in Slot A needs skill.*

NOTE: *Place a mat beneath the computer to prevent making a scratch on the lid when replacing the memory module. Avoid the mat that generates static electricity.*

CAUTION: *Use only memory modules approved by TOSHIBA.*

CAUTION: *Do not try to install or remove a memory module under the following conditions. You can damage the computer and the module. Also, data will be lost.*

1. *The computer is turned on.*
2. *The computer was shut down using the Standby mode or Hibernation mode.*
3. *Wake-up on LAN is enabled.*

If you install a memory module that is not compatible with the computer, beep will sound when you turn on the power. If the module is installed in slot A, there will be a long beep (1 second) followed by two short beeps (0.5 second each). If the memory module is in slot B, there will be a long beep followed by four short beeps. If the both memory modules in slot A and slot B are incompatible, there will be a long beep followed by two short beeps and after a pause (1 second) a long beep followed by four short beeps. In this case, shut down the power and remove the incompatible module(s).

CAUTION: *Be sure to install memory module to Slot A. The computer does not boot when Slot A is vacant.*

NOTE: *Use a 1-bit, Phillips screwdriver to remove and fasten screws. Use of an incorrect screwdriver can damage the screw heads.*

Removing and installing memory module in Slot A

Follow the steps below to remove and install a memory module in Slot A.

1. Turn the computer's power off. Make sure the **Power** indicator is off.
2. Remove AC adaptor and all cables connected to the computer.
3. Turn the computer upside down with the front side of the computer facing to you and remove the battery pack. Refer to *Removing the Battery Pack* in chapter 6; Power and Power-up Modes for the detail.

4. Turn the computer to the normal position and open the display panel. Tilt the display panel slightly beyond the upright position before removing the keyboard display.
5. Put your fingers on the both ends of the keyboard brace and remove it carefully to the direction indicated with arrows.

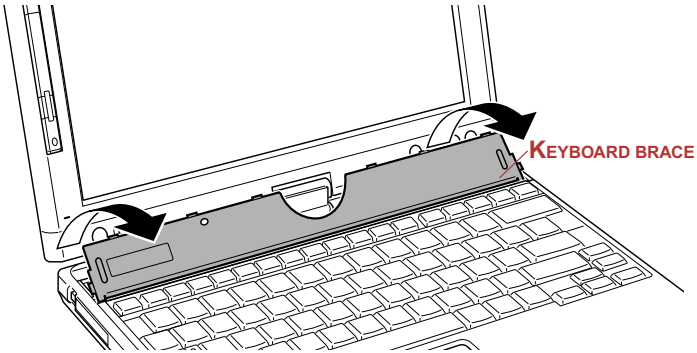


Figure 8-9 Removing the keyboard brace

6. Remove two screws (right and left at the both right and left end of the keyboard) fixing the keyboard.

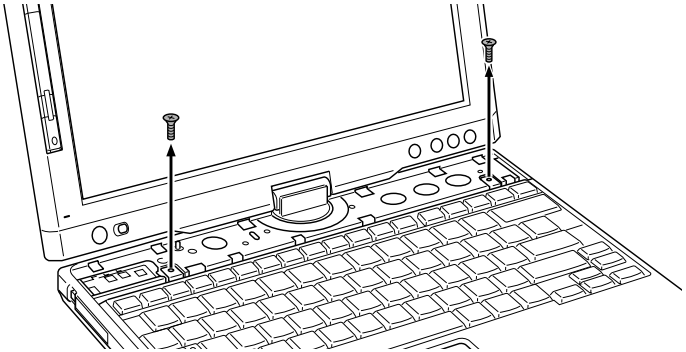


Figure 8-10 Removing the keyboard (1)

CAUTION: *Be careful not to drop the screw inside the computer when removing.*

7. Press the keyboard to the other side. Turn the keyboard upside down when a flat cable appears.

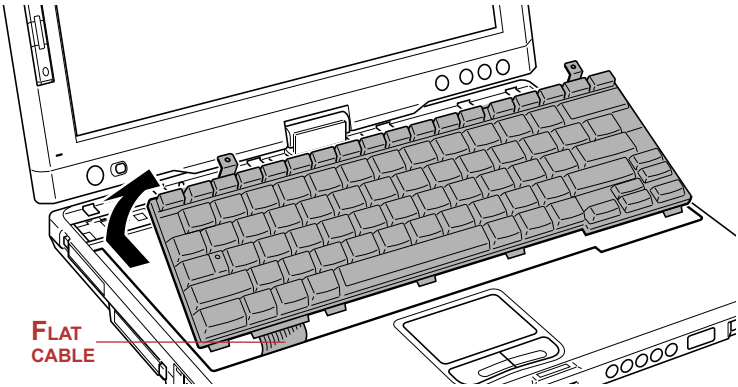


Figure 8-11 Removing the keyboard (2)

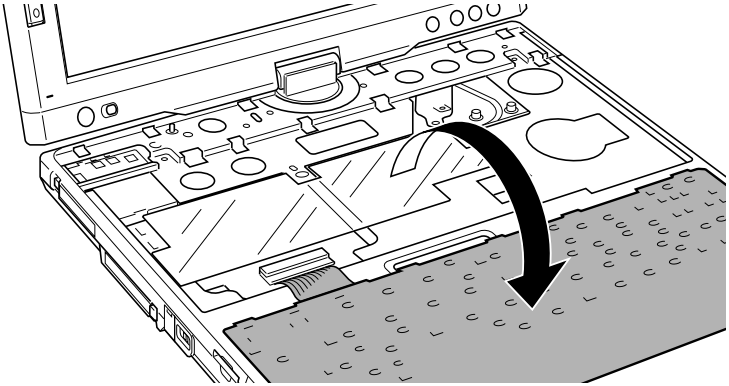


Figure 8-12 Removing the keyboard (3)

8. Raise the insulation sheet covering the memory module to appear the module.

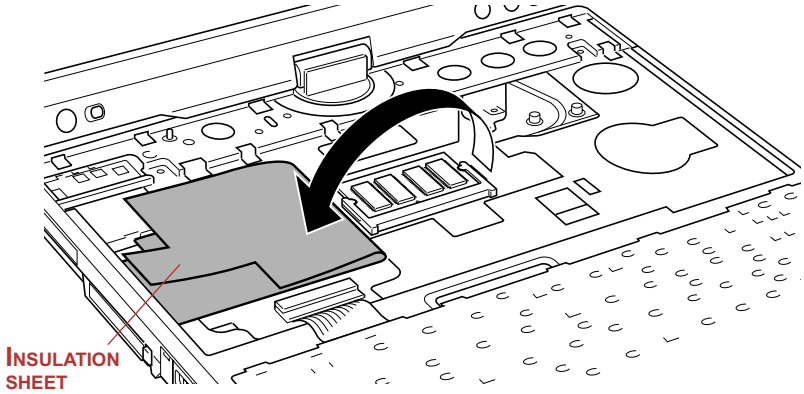


Figure 8-13 Raising the insulation sheet

9. Push the latches to the outside to release the module. A spring will force one end of the module up.

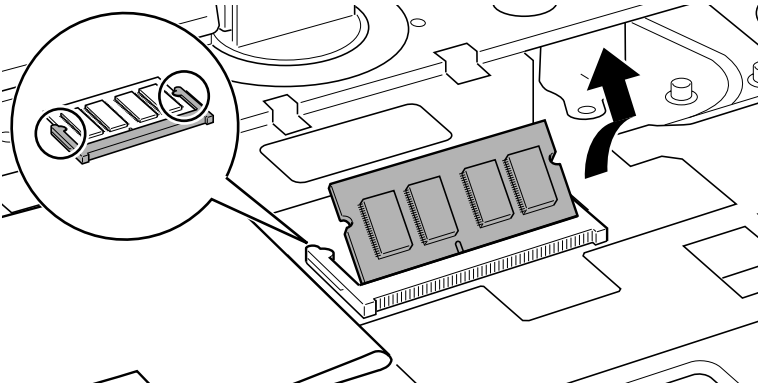


Figure 8-14 Removing the memory module

10. Pinch the module by the sides and pull it out.

CAUTION: *Do not touch the connectors on the memory module or on the computer. Debris on the connectors may cause memory access problems.*

11. Insert a new module to the socket and push it downward to lie flat. Latches on either side will click into place to secure the module.

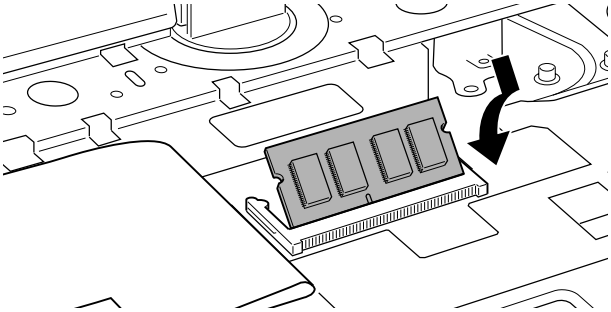


Figure 8-15 Installing memory module in Slot A (1)

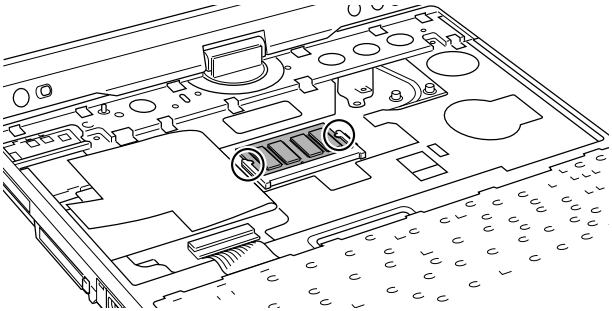


Figure 8-16 Installing memory module in Slot A (2)

12. Seat the insulation sheet to cover the module.

NOTE: *Be sure to check that the insulation sheet is returned to the original position to cover the memory module.*

13. Insert two tabs into slit of the computer case and seat the keyboard at the original position. Fix it with two screws removed in 5.
14. Seat the keyboard brace in the original position.
15. Replace the battery pack as described in Chapter 6, *Power and Power-up Modes*.
16. Turn the power on and make sure the added memory is recognized.

NOTE: *When you view the memory display, the total amount will be reduced by 16MB, which is used for VRAM.*

Installing memory module in Slot B

Follow the steps below to install a memory module.

1. Set the computer to boot mode and turn off the power.
2. Remove all cables connected to the computer.
3. Turn the computer upside down and remove the battery pack (refer to Chapter 6, *Power and Power-Up Modes*.)
4. Remove one screw securing the memory module cover.
5. Slide your fingernail or a thin object under the cover and lift it off.

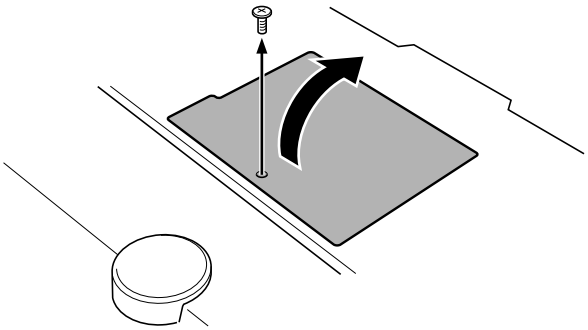


Figure 8-17 Removing the memory module cover

CAUTION:*Be careful not to drop the screw inside the computer when removing.*

6. Lift one side of the insulator sheet and fit the module's connectors into the computer's connectors at about a 45 degree angle. Press the module carefully to ensure a firm connection.

   CAUTION: *Do not touch the connectors on the memory module or on the computer. Debris on the connectors may cause memory access problems.*

7. Push the module down so it lies flat. Latches on either side will click into place to secure the module.

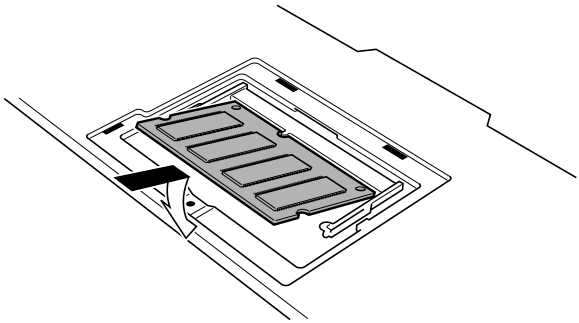


Figure 8-18 Inserting a module (1)

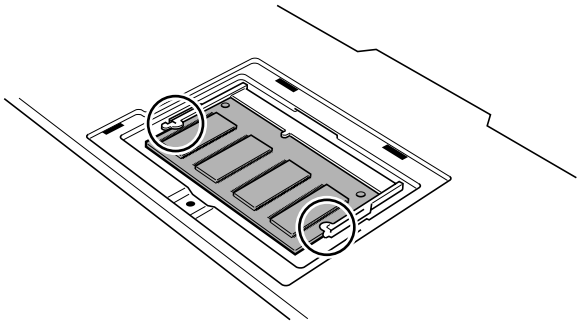


Figure 8-19 Inserting a module (2)

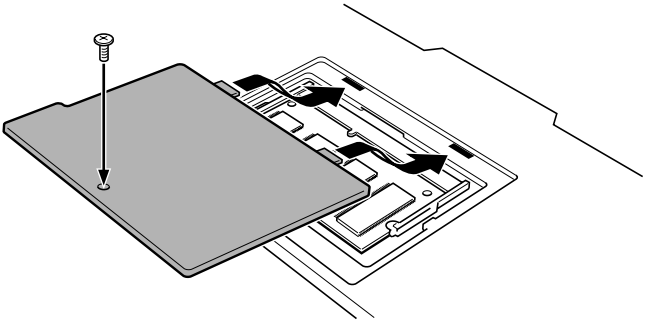


Figure 8-20 Inserting a module (3)

8. Seat the cover and secure it with one screw.
9. Replace the battery pack as described in Chapter 6, *Power and Power-Up Modes*.
10. Turn the power on and make sure the added memory is recognized.

NOTE: *When you view the memory display, the total amount will be reduced by 16 MB, which is used for VRAM.*

Removing memory module in Slot B

To remove the memory module, make sure the computer is in boot mode then:

1. Be sure the power is off and all cables are disconnected from the computer.
2. Turn the computer upside down and remove the battery and one screw securing the memory module cover.
3. Slide your fingernail or a thin object under the cover and lift it off.
4. Lift one side of the insulator and push the latches to the outside to release the module. A spring will force one end of the module up.
5. Pinch the module by the sides and pull it out.

CAUTIONS: *1. If you use the computer for a long time, the memory modules will become hot. In this case, let the memory modules cool to room temperature before you replace them.*

2. Do not touch the connectors on the memory module or on the computer. Debris on the connectors may cause memory access problems.

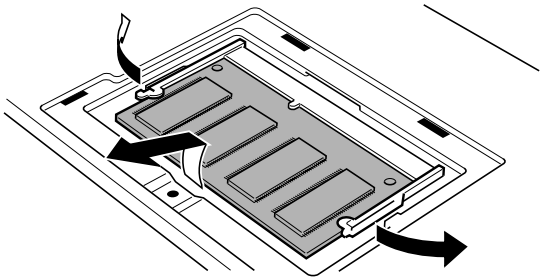


Figure 8-21 Removing the memory module

6. Set the cover and secure it with one screw and replace the battery pack.

Battery Pack

You can increase the portability of the computer with Battery Packs (PA3228U). If you're away from an AC power source, you can replace a low battery with a fully charged one. See Chapter 6, *Power and Power-Up Modes*.

Universal AC Adaptor

If you frequently transport the computer between different sites such as your home and office, purchasing an AC adaptor (PA3241 or PA3083) for each location will reduce the weight and bulk of your carrying load. The AC adaptor (PA3241) is included in the product when purchased.

Battery Charger

The battery charger (PA3091U) provides a convenient way to charge battery packs without requiring the use your computer. The battery charger holds up to two Lithium-ion battery packs.

USB FDD Kit

The 3 1/2" external diskette drive module can be connected to the USB port. For details on connecting the 3 1/2" external diskette drive module, refer to Chapter 4, *Operating Basics*.

External monitor

An external analog monitor can be connected to the external monitor port on the computer. The computer supports VGA and Super VGA video modes. To connect a monitor, follow the steps below.

1. Turn the computer off.
2. Connect the monitor to the external monitor port.
3. Turn the monitor's power on.
4. Turn the computer on.

When you turn on the power, the computer automatically recognizes the monitor and determines whether it is color or monochrome.

To change the display settings, press **Fn + F5**. If you disconnect the monitor before you turn the computer off, be sure to press **Fn + F5** to switch to the internal display. Refer to Chapter 5, *The Keyboard*, for details on using hot keys to change the display setting.

Security lock

A security lock enables you to anchor your computer to a desk or other heavy object to help prevent unauthorized removal of the computer.

Attach one end of a cable to the desk and the other end to the security lock slot on the left side of the computer.

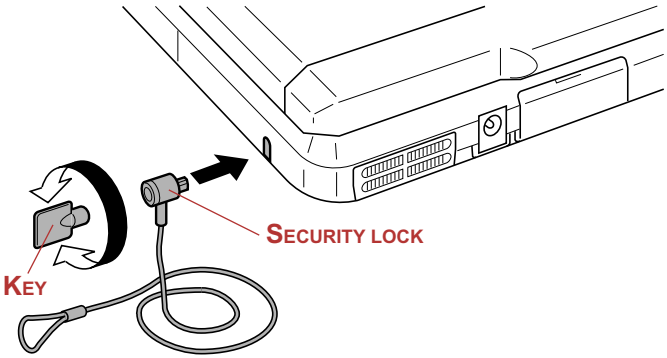


Figure 8-22 Security lock

Troubleshooting

TOSHIBA designed the computer for durability. However, should problems occur, following the procedures in this chapter can help to determine the cause.

All readers should become familiar with this chapter. Knowing what might go wrong can help prevent problems from occurring.

Problem solving process

Resolving problems will be much easier if you observe the following guidelines:

- Stop immediately when you recognize a problem exists. Further action may result in data loss or damage. You may destroy valuable problem-related information that can help solve the problem.
- Observe what is happening. Write down what the system is doing and what actions you performed immediately before the problem occurred. If you have a printer attached, print a copy of the screen using **PrtSc**.

The questions and procedures offered in this chapter are meant as a guide, they are not definitive problem solving techniques. Many problems can be solved simply, but a few may require help from your dealer. If you find you need to consult your dealer or others, be prepared to describe the problem in as much detail as possible.

Preliminary checklist

Consider the simplest solution first. The items in this checklist are easy to fix and yet can cause what appears to be a serious problem.

- Make sure you turn on all peripheral devices before you turn on the computer. This includes your printer and any other external device you are using.
- Before you attach an external device, turn the computer off. When you turn the computer back on it recognizes the new device.
- Make sure all options are set properly in the setup program.
- Check all cables. Are they correctly and firmly attached? Loose cables can cause signal errors.
- Inspect all connecting cables for loose wires and all connectors for loose pins.

- Check that your diskette is correctly inserted and that the diskette's write protect tab is correctly set.

Make notes of your observations and keep them in a permanent error log. This will help you describe your problems to your dealer. If a problem recurs, the log will help you identify the problem faster.

Analyzing the problem

Sometimes the system gives clues that can help you identify why it is malfunctioning. Keep the following questions in mind:

- Which part of the system is not operating properly: keyboard, diskette drives, hard disk drive, printer, display. Each device produces different symptoms.
- Is the operating system configuration set properly? Check the configuration options.
- What appears on the display screen? Does it display any messages or random characters? Print a copy of the screen if you have a printer attached. Look up the messages in the software and operating system documentation. Check that all connecting cables are correctly and firmly attached. Loose cables can cause erroneous or intermittent signals.
- Do any icons light? Which ones? What color are they? Do they stay on or blink? Write down what you see.
- Do you hear any beeps? How many? Are they long or short? Are they high pitched or low? Is the computer making any unusual noises? Write down what you hear.

Record your observations so you can describe them to your dealer.

Software The problems may be caused by your software or diskette. If you cannot load a software package, the media (usually a diskette) may be damaged or the program might be corrupted. Try loading another copy of the software.

If an error message appears while you are using a software package, check the software documentation. These documents usually include a problem solving section or a summary of error messages.

Next, check any error messages in the OS documentation.

Hardware If you cannot find a software problem, check your hardware. First run through the items in the preliminary checklist above. If you still cannot correct the problem, try to identify the source. The next section provides checklists for individual components and peripherals.

Hardware and system checklist

This section discusses problems caused by your computer's hardware or attached peripherals. Basic problems may occur in the following areas:

- ❑ System start-up
- ❑ Self test
- ❑ Power
- ❑ Password
- ❑ Keyboard
- ❑ LCD panel
- ❑ Hard disk drive
- ❑ Diskette drive
- ❑ Infrared port
- ❑ Pointing device
- ❑ PC card
- ❑ SD card
- ❑ Compact Flash
- ❑ Monitor
- ❑ Sound system
- ❑ USB
- ❑ Memory expansion
- ❑ Modem
- ❑ LAN
- ❑ Wireless LAN
- ❑ Bluetooth

System start-up

When the computer does not start properly, check the following items:

- ❑ Self Test
- ❑ Power Sources
- ❑ Power-on Password

Self test

When the computer starts up, the self-test will be run automatically, and the following will be displayed:

```
In Touch with Tomorrow

TOSHIBA
```

This message remains on the screen for a few seconds.

If the self test is successful, the computer tries to load the operating system, depending on how the Boot Priority is set in the HW Setup program.

Refer to Chapter 7, HW Setup and Passwords, HW Setup, Boot Priority, for the detail.

If any of the following conditions are present, the self test failed:

- The computer stops and does not proceed to display information or messages.
- Random characters appear on the screen, and the system does not function normally.
- The screen displays an error message.

Turn off the computer and check all cable connections. If the test fails again, contact your dealer.

Power

When the computer is not plugged into an AC adaptor, the Battery Pack is the primary power source. However, your computer has a number of other power resources, including intelligent power supply and Real Time Clock battery. These resources are interrelated and any one could affect apparent power problems. This section provides check lists for AC adaptor and the main battery. If you cannot resolve a problem after following them, the cause could lie with another power resource. In such case, contact your dealer.

Overheating power down

If the computer's internal temperature becomes too high, the computer will automatically enter Hibernation or Resume mode and shut down.

Problem	Procedure
Computer shuts down and **DC IN** indicator blinks orange	Leave the computer off until the **DC IN** indicator stops blinking. ***NOTE:*** *It is recommended to leave the computer off until the its interior reaches room temperature even though the* **DC IN** *indicator stops blinking.* If the computer has reached room temperature and still does not start, or if it starts but shuts down quickly contact your dealer.
Computer shuts down and its DC IN indicator is flashing in green	Indicates a problem with the heat dispersal system. Please contact your dealer.

AC power

If you have trouble turning on the computer with the AC adaptor connected, check the **DC IN** indicator. Refer to Chapter 6, *Power and Power-Up Modes* for more information.

Problem	Procedure
AC adaptor doesn't power the computer (**DC IN** indicator does not glow green)	Check the connections. Make sure the cord is firmly connected to the computer and a power outlet.
	Check the condition of the cord and terminals. If the cord is frayed or damaged, replace it. If the terminals are soiled, wipe them with cotton or a clean cloth. If the AC adaptor still does not power the computer, contact your dealer.

Battery

If you suspect a problem with the battery, check the **DC IN** indicator as well as the **Battery** indicator. For information on indicators and battery operation see Chapter 6, *Power and Power-Up Modes*.

Problem	Procedure
Battery doesn't power the computer	The battery may be discharged. Connect the AC adaptor to charge the battery.
Battery doesn't charge when the AC adaptor is attached (**Battery** indicator does not glow in orange.)	If the battery is completely discharged, it will not begin charging immediately. Wait a few minutes. If the battery still does not charge, make sure the outlet of the AC adaptor is supplying power. Test it by plugging in an appliance.
	Check whether the battery is hot or cold to the touch. If the battery is too hot or too cold, it will not charge properly. Let it reach room temperature.
	Unplug the AC adaptor and remove the battery to make sure the terminals are clean. If necessary wipe them with a soft dry cloth dipped in alcohol. Connect the AC adaptor and replace the battery. Make sure it is securely seated. Check the **Battery** indicator. If it does not glow, let the computer charge the battery for at least 20 minutes. If the **Battery** indicator glows after 20 minutes, let the battery continue to charge at least another 20 minutes before turning on the computer. If the indicator still does not glow, the battery may be at the end of its operating life. Replace it. If you do not think the battery is at the end of its operating life, see your dealer.

Battery doesn't power the computer as long as expected	If you frequently recharge a partially charged battery, the battery might not charge to its full potential. Fully discharge the battery, then try to charge it again.
	Check the power consumption settings in Power Saver utility. Consider using a power saving mode.

Password

Problem	Procedure
Cannot enter password	Refer to the *Password* section in Chapter 7, *HW Setup and Passwords*.

Keyboard

Keyboard problems can be caused by your setup configuration. For more information refer to Chapter 5, *The Keyboard*.

Problem	Procedure
Some letter keys produce numbers	Check that the numeric keypad overlay is not selected. Press **Fn** + **F10** and try typing again.
Output to screen is garbled	Make sure the software you are using is not remapping the keyboard. Remapping involves reassigning the meaning of each key. See your software's documentation. If you are still unable to use the keyboard, consult your dealer.

LCD panel

Apparent LCD problems may be related to the computer's setup. Refer to Chapter 7, *HW Setup and Passwords*, for more information.

Problem	Procedure
No display	Press hotkeys **Fn** + **F5** to change the display priority, to make sure it is not set for an external monitor.
Problems above remain unresolved or other problems occur	Refer to your software's documentation to determine if the software is causing the difficulty.
	Run the diagnostic test.
	Contact your dealer if the problems continue.

Hard disk drive

Problem	Procedure
Computer does not boot from hard disk drive	Check if a diskette is in the diskette drive. If a diskette is inserted, remove it and reboot.
	There may be a problem with your operating system files. Refer to your OS documentation.
Slow performance	Your files may be fragmented. Run SCANDISK and defragmenter to check the condition of your files and disk. Refer to your OS documentation or online HELP for information on running SCANDISK and the defragmenter.

	As a last resort, reformat the hard disk. Then, reload the operating system and other files. If problems persist, contact your dealer.

Diskette drive

For more information, refer to Chapter 4, *Operating Basics.*

Problem	Procedure
Drive does not operate	There may be a faulty cable connection. Check the connection to the computer and to the drive.
Some programs run correctly but others do not	The software or hardware configuration may be causing a problem. Make sure the hardware configuration matches your software needs.
You cannot access the external 3 1/2" diskette drive	Try another diskette. If you can access the diskette, the original diskette (not the drive) is probably causing the problem. If problems persist, contact your dealer.

Infrared port

Refer also to the documentation for your IrDA compatible device and related software.

Problem	Procedure
Infrared devices do not work as expected	Check that the device is connected to an electric outlet. Make sure the outlet is supplying power by plugging in an appliance.

	Make sure there is no obstruction blocking communication between the computer and the target device. If problems persist, contact your dealer.

Pointing device

If you are using a USB mouse, also refer to the *USB* section in this chapter and to your mouse documentation.

TOSHIBA tablet pen

Problem	Procedure
On-screen pointer does not respond to tablet pen operation	The system might be busy. If the pointer is shaped as an hourglass, wait for it to resume its normal shape and try again to move it. The tablet Pen might be set unable to use. Press **Fn** + **F9** keys to change Pen setting to enabled.
Tablet pen and on-screen pointer do not move in the same manner	Adjust the coordinate axis in the following procedure. 1. Open the **Control Panel** and click **Printer** and other Hardware. 2. Click the **Tablet** and **Pen** setting. 3. Select screen orientation with "**Calibrate**" in "**Setting**" tab. 4. Click "**Calibrate**" button. 5. Click the cross in "**Calibrate the screen**" and click "**OK**".

Unable input from tablet pen	Adjust the setting in the following procedure. 1. Open the **Control Panel** and click **Printer** and other Hardware. 2. Click the **Tablet** and **Pen** setting. 3. Adjust setting of each item of "**Pen options**" tab and click "**OK**".

Touch Pad

Problem	Procedure
On-screen pointer does not respond to Pad operation	The system might be busy. If the pointer is shaped as an hourglass, wait for it to resume its normal shape and try again to move it.
Double-tapping does not work	Try changing the double-click speed setting in the mouse control utility. 1. Open the **Control Panel**, select the **Mouse** icon and press **Enter**. 2. Click the **Buttons** tab. 3. Set the double-click speed as instructed and click **OK**.
The mouse pointer moves too fast or too slow	Try changing the speed setting in the mouse control utility. 1. Open the **Control Panel**, select the **Mouse** icon and press **Enter**. 2. Click the **Pointer Options** tab. 3. Set the speed as instructed and click **OK**. If problems persist, contact your dealer.

USB mouse

Problem	Procedure
On-screen pointer does not respond to mouse operation	The system might be busy. If the pointer is shaped as an hourglass, wait for it to resume its normal shape and try again to move it.
	Make sure the mouse is properly connected to the USB port.
Double-clicking does not work	Try changing the double-click speed setting in the mouse control utility. 1. Open the **Control Panel**, select the **Mouse** icon and press **Enter**. 2. Click the **Buttons** tab. 3. Set the double-click speed as instructed and click **OK**.
The mouse pointer moves too fast or too slow	Try changing the speed setting in the mouse control utility. 1. Open the **Control Panel**, select the **Mouse** icon and press **Enter**. 2. Click the **Pointer Options** tab. 3. Set the speed as instructed and click **OK**.
The mouse pointer moves erroneously	The mouse might be dirty. Refer to your mouse documentations for instructions on cleaning. If problems persist, contact your dealer.

PC card

Refer also to Chapter 8, *Optional Devices*.

Problem	Procedure
PC card error occurs	Reseat the PC card to make sure it is firmly connected.
	Make sure the connection between the external device and the card is firm.
	Check the card's documentation.
	If problems persist, contact your dealer.

SD card

Refer also to Chapter 8, *Optional Devices*.

Problem	Procedure
SD card error occurs	Reseat the SD card to make sure it is firmly connected.
	Check the card's documentation.
You cannot write in an SD card	Make sure the card is not write protected.
You cannot read a file	Make sure the target file is on the SD Card inserted in the slot.
	If problems persist, contact your dealer.

Compact Flash

Refer also to Chapter 8, *Optional Devices*.

Problem	Procedure
Compact Flash error occurs	Reseat the Compact Flash to make sure it is firmly connected.
	Check the card's documentation.
You cannot read a file	Make sure the target file is on the Compact Flash inserted in the slot.
	If problems persist, contact your dealer.

Monitor

Refer also to Chapter 8, *Optional Devices,* and to your monitor's documentation.

Problem	Procedure
Monitor does not turn on	Make sure that the external monitor's power switch is on. Confirm that the external monitor's power cable is plugged into a working power outlet.
No display	Try adjusting the contrast and brightness controls on the external monitor.
	Press hotkeys **Fn + F5** to change the display priority and make sure it is not set for the internal display.
Display error occurs	Check that the cable connecting the external monitor to the computer is attached firmly.
	If problems persist, contact your dealer.

Sound system

Refer also to documentation for your audio devices.

Problem	Procedure
No sound is heard	Adjust the volume control dial.
	Check the software volume settings.
	Make sure the headphone connection is secure. If problems persist, contact your dealer.

USB

Refer also to your USB device's documentation.

Problem	Procedure
USB device does not work	Check for a firm cable connection between the USB ports on the computer and the USB device.
	Make sure the USB device drivers are properly installed. Refer to your Windows documentation for information on checking the drivers.
	If you are using an operating system that does not support USB, you can still use a USB mouse and/or USB keyboard. If these devices do not work, make sure the USB KB/Mouse Legacy Emulation item in HW Setup is set to **Enabled**. If problems persist, contact your dealer.

Memory expansion

Refer also to Chapter 8, *Optional Devices*, for information on installing memory modules.

Problem	Procedure
Beep sounds. (If memory is in slot A, a long beep (1 second) followed by two short beeps (0.5 second each). If in slot B, a long beep followed by four short beeps. If both in slot A and slot B, a long beep followed by two short beeps and after a pause (1 second) a long beep followed by four short beeps.)	Make sure the memory module installed in the expansion slot is compatible with the computer. If an incompatible module has been installed, follow the steps below. 1. Turn off the power. 2. Disconnect the AC adaptor and all peripheral devices. 3. Remove the battery pack. 4. Remove the memory module. 5. Install the memory module compatible with the computer. 6. Install the battery pack and/or connect the AC adaptor. 7. Turn on the power.

Modem

Refer to the online help files for Appendix C and D.

Problem	Procedure
Communication software can't initialize modem	Make sure the computer's internal modem settings are correct. Refer to *Modem* Properties in the Control Panel.
You can hear a dial tone but can't make a call	If the call is going through a PBX machine, make sure the communication application's tone dial detection feature is disabled.

	You can also use the ATX command. Refer to the online help files for Appendix C, AT Commands.
You place a call, but a connection can't be made	Make sure the settings are correct in your communications application.
After making a call you can't hear a ring	Make sure the tone or pulse selection in your communications application is set correctly. You can also use the ATD command. Refer to the online help files for Appendix C, AT Commands.
Communication is cut off unexpectedly	The computer will automatically cut off communication when connection with the carrier is not successful for a set time interval. Try lengthening this time interval.
A **CONNECT** display is quickly replaced by **NO CARRIER**	Check the error control setting in your communications application. You can also use the AT\N command. Refer to the online help files for Appendix C, AT Commands.
Character display becomes garbled during a communication	In data transmission, make sure the parity bit and stop bit settings correspond with those of the remote computer. Check the flow control and communication protocol.

You cannot receive an incoming call	Check the rings before auto answer setting in your communications application. You can also use the ATS0 command. Refer to the online help files for Appendix D, S-registers. If problems persist, contact your dealer.

LAN

Problem	Procedure
Cannot access LAN	Check for a firm cable connection between the LAN jack and the LAN HUB. If problems persist, consult your LAN administrator.
Wake-up on LAN does not work	Make sure the AC adaptor is connected. The Wake-up on LAN function consumes power even when the system is off. If problems persist, consult your LAN administrator.

Wireless LAN

If the following procedures do not restore LAN access, consult your LAN administrator. For more information on wireless communication, refer to Chapter 4, *Operating Basics*.

Problem	Procedure
Cannot access Wireless LAN	Make sure the computer's wireless communication switch is set to on. If problems persist, consult your LAN administrator.

Bluetooth

For more information on wireless communication, refer to Chapter 4, *Operating Basics*.

Problem	Procedure
Cannot access Bluetooth device	Make sure the computer's wireless communication switch is set to on. Make sure the Bluetooth Manager is running and the power to the Bluetooth device is turned on. Make sure no optional Bluetooth PC card is installed in the computer. The built-in Bluetooth function and an optional Bluetooth PC card cannot operate simultaneously . If problems persist, contact your dealer.

TOSHIBA support

If you require any additional help using your computer or if you are having problems operating the computer, you may need to contact TOSHIBA for additional technical assistance.

Before you call

Some problems you experience may be related to software or the operating system. It is important to investigate other sources of assistance first. Before contacting TOSHIBA, try the following:

- Review troubleshooting sections in the documentation for software and peripheral devices.
- If a problem occurs when you are running software applications, consult the software documentation for troubleshooting suggestions. Call the software company's technical support for assistance.
- Consult the dealer you purchased your computer and/or software from. They are your best sources for current information and support.

Where to write

If you are still unable to solve the problem and suspect that it is hardware related, write to TOSHIBA at the nearest location listed on the below.

Outside of Europe

Australia

TOSHIBA Australia Pty. Ltd.
Information Systems Division
84-92 Talavera Road
North Ryde N.S.W. 2113
Sydney

Canada

TOSHIBA of Canada Ltd.
191 McNabb Street,
Markham, Ontario
L3R8H2

China

TOSHIBA Computer Systems
(Shanghai) Co., Ltd.Bldg.33, No.35,
Jinzang Road,
Pudong New Area,
Shanghai,
P.R. China 201206

Singapore

TOSHIBA Singapore Pte. Ltd.
438B Alexandra Road #06-01
Alexandra Technopark
Singapore 119968

United States of America

TOSHIBA America Information Systems, Inc.

9740 Irvine Boulevard

Irvine, California 92618

USA

In Europe

Germany & Austria

TOSHIBA Europe (I.E.) GmbH

Geschäftsbereich,

Deutschland-Österreich

Hammfelddamm 8,

D-41460 Neuss, Germany

France

TOSHIBA Systèms France S.A.

7, Rue Ampère B.P. 131,

92804 Puteaux Cedex

Netherlands

TOSHIBA Information Systems, Benelux B.V.

Rivium Boulevard

41 2909 LK Capelle a/d IJssel

Spain

TOSHIBA Information Systems, ESPAÑA

Parque Empresarial San Fernando

Edificio Europa, 1ª Planta,

Escalera A 28830 Madrid

United Kingdom

TOSHIBA Information Systems (U.K.) Ltd.

TOSHIBA Court

Weybridge Business Park

Addlestone Road

Weybridge, Surrey KT15 2UL

The Rest of Europe

TOSHIBA Europe (I.E.) GmbH

Geschäftsbereich,

Deutschland-Österreich

Hammfelddamm 8,

D-41460 Neuss, Germany

Appendix A

Specifications

This appendix summarizes the computer's technical specifications.

Physical Dimensions

Size

With TFT display	295 (w) x 234 (d) x 31 (front)/33 (rear), 36 (max) millimeters (does not include the thicker part of the bottom of the computer)

Weight

Hard disk	Memory	Display	Kilograms
40GB	256 MB	12" XGA-TFT	1.9 kg

Environmental Requirements

Conditions	Ambient temperature	Relative humidity
Operating	5°C (41°F) to 35°C (95°F)	20% to 80%
Nonoperating	-20°C (-4°F) to 65°C (149°F)	10% to 90%
Thermal Gradient	20°C per hour maximum	
Wet-bulb temperature	26°C maximum	
Conditions	**Altitude (from sea level)**	
Operating	-60 to 3,000 meters	
Nonoperating	-60 to 10,000 meters *maximum*	

Power Requirements

AC adaptor	100- 240 volts AC 50 or 60 hertz (cycles per second)

Computer	15VDC
	3.0 amperes

Built-in Modem

Network control unit (NCU)

Type of NCU	AA
Type of line	Telephone line (analog only)
Type of dialing	Pulse Tone
Control command	AT commands EIA-578 commands
Monitor function	Computer's speaker

Communication specifications

Communication system	Data:	Full duplex
	Fax:	Half duplex
Communication protocol	Data	
	ITU-T-Rec (Former CCITT)	V.21/V.22/V.22bis/V.32 /V.32bis/V.34/V.90
	Bell	103/212A
	Fax	
	ITU-T-Rec (Former CCITT)	V.17/V.29/V.27ter /V.21 ch2
Communication speed	Data transmission and reception 300/1200/2400/4800/7200/9600/12000/14400/ 16800/19200/21600/24000/26400/28800/31200/ 33600 bps Data reception only with V.90 28000/29333/30666/32000/33333/34666/36000/37333/ 38666/40000/41333/42666/44000/45333/46666/48000/ 49333/50666/52000/53333/54666/56000 bps Fax 2400/4800/7200/9600/12000/14400 bps	
Error correcting	MNP class 4 and ITU-T V.42	
Data compression	MNP class 5 and ITU-T V.42bis	

Display Controller and Modes

Display controller

The display controller interprets software commands into hardware commands that turn particular pels on or off.

The controller is an advanced Video Graphics Array (VGA) that provides Super VGA (SVGA) and Extended Graphics Array (XGA) support for the internal LCD and external monitors. The displays up to 1024 x 768 (XGA). The controller also supports simultaneous display on the internal LCD and on an external monitor.

A high-resolution external monitor connected to the computer can display up to 1600 horizontal and 1200 vertical pixels and up to 64K colors.

The display controller also controls the video mode, which uses industry standard rules to govern the screen resolution and the maximum number of colors that can be displayed on screen.

Software written for a given video mode will run on any computer that supports the mode.

The computer's display controller supports all VGA and SVGA modes, the most widely used industry standards.

Video modes

The computer supports video modes defined in the table below. If your application offers a selection of mode numbers that do not match the numbers on the table, select a mode based on mode type, resolution, character matrix, number of colors and refresh rates. Also, consider the following points:

- ❑ If your software supports both graphics and text modes, the screen display may appear to operate faster using a text mode.
- ❑ The LCD's highest graphics resolution is 1024 horizontal x 768 vertical lines.
- ❑ If a resolution greater than the display's physical capacity is selected, the display driver renders a virtual display.

Table Video modes (Landscape)

Video mode	*Type*	*Resolution*	*Character matrix (pels)*	*LCD colors*	*CRT colors*	*Scanning frequency Vertical*
0, 1	VGA Text	40 x 25 Characters	8 x 8	16 of 256K	16 of 256K	70Hz
2, 3	VGA Text	80 x 25 Characters	8 x 8	16 of 256K	16 of 256K	70Hz
0*, 1*	VGA Text	40 x 25 Characters	8 x 14	16 of 256K	16 of 256K	70Hz
2*, 3*	VGA Text	80 x 25 Characters	8 x 14	16 of 256K	16 of 256K	70Hz
0+, 1+	VGA Text	40 x 25 Characters	8(9) x 16	16 of 256K	16 of 256K	70Hz
2+, 3+	VGA Text	80 x 25 Characters	8(9) x 16	16 of 256K	16 of 256K	70Hz
4, 5	VGA Grph	320 x 200 Pels	8 x 8	4 of 256K	4 of 256K	70Hz
6	VGA Grph	640 x 200 Pels	8 x 8	2 of 256K	2 of 256K	70Hz
7	VGA Text	80 x 25 Characters	8(9) x 14	Mono	Mono	70Hz
7+	VGA Text	80 x 25 Characters	8(9) x 16	Mono	Mono	70Hz

Table Video modes continued (Landscape)

Video mode	*Type*	*Resolution*	*Character matrix (pels)*	*LCD colors*	*CRT colors*	*Scanning frequency Vertical*
D	VGA Grph	320 x 200 Pels	8 x 8	16 of 256K	16 of 256K	70Hz
E	VGA Grph	640 x 200 Pels	8 x 8	16 of 256K	16 of 256K	70Hz
F	VGA Grph	640 x 350 Pels	8 x 14	Mono	Mono	70Hz
10	VGA Grph	640 x 350 Pels	8 x 14	16 of 256K	16 of 256K	70Hz
11	VGA Grph	640 x 480 Pels	8 x 16	2 of 256K	2 of 256K	60Hz
12	VGA Grph	640 x 480 Pels	8 x 16	16 of 256K	16 of 256K	60Hz
13	VGA Grph	320 x 200 Pels	8 x 8	256 of 256K	256 of 256K	70Hz
	SVGA Grph	640 x 480 Pels		256 of 256K	256 of 256K	60Hz 75Hz 85Hz
	SVGA Grph	800 x 600 Pels		256 of 256K	256 of 256K	60Hz 75Hz 85Hz
	SVGA Grph	1024 x 768 Pels		256 of 256K	256 of 256K	60Hz 75Hz 85Hz
	SVGA Grph	1280 x 1024 Pels		256 of 256K	256 of 256K	60Hz 75Hz 85Hz
	SVGA Grph	1600 x 1200 Pels		256 of 256K	256 of 256K	60Hz

Table Video modes continued (Landscape)

Video mode	*Type*	*Resolution*	*Character matrix (pels)*	*LCD colors*	*CRT colors*	*Scanning frequency Vertical*
	SVGA Grph	640 x 480 Pels		64K of 64K	64K of 64K	60Hz 75Hz 85Hz
	SVGA Grph	800 x 600 Pels		64K of 64K	64K of 64K	60Hz 75Hz 85Hz
	SVGA Grph	1024 x 768 Pels		64K of 64K	64K of 64K	60Hz 75Hz 85Hz
	SVGA Grph	1280 x 1024 Pels		64K of 64K	64K of 64K	60Hz 75Hz 85Hz
	SVGA Grph	1600 x 1200 Pels		64K of 64K	64K of 64K	60Hz
	SVGA Grph	640 x 480 Pels		16M of 16M	16M of 16M	60Hz 75Hz 85Hz
	SVGA Grph	800 x 600 Pels		16M of 16M	16M of 16M	60Hz 75Hz 85Hz
	SVGA Grph	1024 x 768 Pels		16M of 16M	16M of 16M	60Hz 75Hz

Table Video modes (Portrait)

Video mode	*Type*	*Resolution*	*Character matrix (pels)*	*LCD colors*	*CRT colors*	*Scanning frequency Vertical*
D	VGA Grph	200 x 320 Pels	8 x 8	16 of 256K	16 of 256K	70Hz
E	VGA Grph	200 x 640 Pels	8 x 8	16 of 256K	16 of 256K	70Hz
F	VGA Grph	350 x 640 Pels	8 x 14	Mono	Mono	70Hz
10	VGA Grph	350 x 640 Pels	8 x 14	16 of 256K	16 of 256K	70Hz
11	VGA Grph	480 x 640 Pels	8 x 16	2 of 256K	2 of 256K	60Hz
12	VGA Grph	480 x 640 Pels	8 x 16	16 of 256K	16 of 256K	60Hz
13	VGA Grph	200 x 320 Pels	8 x 8	256 of 256K	256 of 256K	70Hz
	SVGA Grph	480 x 640 Pels		256 of 256K	256 of 256K	60Hz 75Hz 85Hz
	SVGA Grph	600 x 800 Pels		256 of 256K	256 of 256K	60Hz 75Hz 85Hz
	SVGA Grph	768 x 1024 Pels		256 of 256K	256 of 256K	60Hz 75Hz 85Hz
	SVGA Grph	1024 x 1280 Pels		256 of 256K	256 of 256K	60Hz 75Hz 85Hz
	SVGA Grph	1200 x 1600 Pels		256 of 256K	256 of 256K	60Hz 85Hz

Table Video modes continued (Portrait)

Video mode	*Type*	*Resolution*	*Character matrix (pels)*	*LCD colors*	*CRT colors*	*Scanning frequency Vertical*
	SVGA Grph	480 x 640 Pels		64K of 64K	64K of 64K	60Hz 75Hz
	SVGA Grph	600 x 800 Pels		64K of 64K	64K of 64K	60Hz 75Hz 85Hz
	SVGA Grph	768 x 1024 Pels		64K of 64K	64K of 64K	60Hz 75Hz 85Hz
	SVGA Grph	1024 x 1280 Pels		64K of 64K	64K of 64K	60Hz 75Hz 85Hz
	SVGA Grph	1200 x 1600 Pels		64K of 64K	64K of 64K	60Hz
	SVGA Grph	480 x 640 Pels		16M of 16M	16M of 16M	60Hz 75Hz 85Hz
	SVGA Grph	600 x 800 Pels		16M of 16M	16M of 16M	60Hz 75Hz 85Hz
	SVGA Grph	768 x 1024 Pels		16M of 16M	16M of 16M	60Hz 75Hz

AT Commands

In most cases, you will not need to type AT commands manually. However, there might be some occasions when you will need to do so.

This chapter describes AT commands for data mode. Fax and voice commands are taken care of by application software.

The format for entering AT commands is:

ATXn

where **X** is the AT command, and **n** is the specific value for that command. After you type in the command press **Enter**.

Any command issued is acknowledged with a response in either text or numeric values known as result codes.

All commands and command-values accepted by the modem are described in this section; any entry other than those listed results in an error.

+++ Escape sequence

The escape sequence allows the modem to exit data mode and enter on-line command mode. While in on-line command mode, you can communicate directly to your modem using AT commands. Once you finish, you can return to data mode using the ATO command.

A pause, the length of which is set by Escape Guard Time (S12), must be completed after an escape sequence is entered, This pause prevents the modem from interpreting the escape sequence as data.

The value of the escape sequence character may be changed using register S2.

A/ Repeat last command

This command repeats the last command string entered. Do not precede this command with an AT prefix or conclude it by pressing **Enter**.

A Answer command

This command instructs the modem to go off-hook and answer an incoming call.

Bn Communication standard setting

This command determines the communication standard CCITT or Bell.

B0 Selects CCITT V.22 mode when the modem is at 1200 bps.

B1 Selects Bell 212A when the modem is at 1200 bps (default).

B15 Selects V.21 when the modem is at 300 bps.

B16 Selects Bell 103J when the modem is at 300 bps (default).

Result Codes:

OK n=0,1,15,16

ERROR Otherwise

Dn Dial

This command instructs the modem to dial a telephone number. Enter n (the telephone number and any modifiers) after the ATD command.

Any digit or symbol (0-9, *, #, A, B, C, D) may be dialed as touch-tone digits. Characters such as spaces, hyphens, and parentheses do not count. They are ignored by the modem, but you may want to include them to make the number and modifiers easier to read.

The following may be used as phone number modifiers:

P Pulse dialing.

T Touch-tone dialing (default).

, Pause during dialing. Pause for time specified in Register S8 before processing the next character in the dial string.

W Wait for dial tone. Modem waits for a second dial tone before processing the dial string.

@ Wait for quiet answer. Wait for five seconds of silence after dialing the number. If silence is not detected, the modem sends a NO ANSWER result code back to the caller.

! Hook flash. Causes the modem to go on-hook for 0.5 seconds and then return to off-hook.

; Return to command mode. Causes the modem to return to command mode after dialing a number, without disconnecting the call.

S=n Dial a telephone number previously stored using the &Zn=X command (See &Zn=X command for more information). The range is 0-3.

En Echo command

This command controls whether or not the characters entered from your computer keyboard are displayed on your monitor (echoed) while the modem is in command mode.

E0 Disables echo to the computer.

E1 Enables echo to the computer (default).

Result Codes:

OK n=0,1

ERROR Otherwise

Hn Hook control

This command instructs the modem to go on-hook to disconnect a call, or off-hook to make the phone line busy.

H0 Modem goes on-hook (default).

H1 Modem goes off-hook.

Result Codes:

OK n=0,1

ERROR Otherwise

In Request ID information

This command displays product information about the modem.

I0 Returns modem identity string and driver version number.

I3 Same as **I0**.

I9 Returns region ID in English.

Result Codes:

OK n=0,3,9

ERROR Otherwise

Ln Monitor speaker volume

This command sets speaker volume to low, medium, or high.

L0 Low volume.

L1 Low volume. (Same as **L0**)

L2 Medium volume (default).

L3 High volume.

Result Codes:

OK n=0,1,2,3

ERROR Otherwise

Mn Monitor speaker mode

This command turns the speaker on or off.

M0 The speaker is off.

M1 The speaker is on until the modem detects the carrier signal (default).

M2 The speaker is always on when modem is off-hook.

M3 Speaker is on until the carrier is detected, except when dialing.

Result Codes:

OK n=0,1,2,3

ERROR Otherwise

Nn Modulation handshake

This command controls whether or not the local modem performs a negotiated handshake at connection time with the remote modem when the communication speed of the two modems is different.

N0 When originating or answering, this is for handshake only at the communication standard specified by S37 and the ATB command.

N1 When originating or answering, begin the handshake at the communication standard specified by S37 and the ATB command (default).

During handshake, a lower transmission speed may be selected.

Result Codes:

OK n=0,1

ERROR Otherwise

On Return on-line to data mode

O0 Instructs the modem to exit on-line command mode and return to data mode (see AT escape sequence, +++).

O1 This command issues a retrain before returning to on-line data mode.

O3 This command issues a rate renegotiation before returning to on-line data mode.

Result Codes:

OK n=0,1,3

ERROR Otherwise

P Select pulse dialing

This command configures the modem for pulse (non touch-tone) dialing. Dialed digits are pulsed until a T command or dial modifier is received. Tone dial is the default setting.

Qn Result code control

Result codes are informational messages sent from the modem and displayed on your monitor. Basic result codes are **OK**, **CONNECT**, **RING**, **NO CARRIER**, and **ERROR**. The ATQ command allows the user to turn result codes on or off.

Q0 Enables modem to send result codes to the computer (default).

Q1 Disables modem from sending result codes to the computer.

Result Codes:

OK n=0,1

ERROR Otherwise

T Select tone dialing

This command instructs the modem to send DTMF tones while dialing. Dialed digits are tone dialed until a P command or dial modifier is received. This is the default setting.

Vn DCE response format

This command controls whether result codes (including call progress and negotiation progress messages) are displayed as words or their numeric equivalents.

V0 Displays result codes as digits.

V1 Displays result codes as text (default).

Result Codes:

OK n=0,1

ERROR Otherwise

Xn Result code selection, call progress monitoring

This command selects which result codes will be used by the modem.

Command	Dial tone detect	Busy signal detect	Supported Result Code
X0	Disable	Disable	OK, CONNECT, RING, NO CARRIER, ERROR
X1	Disable	Disable	OK, RING, NO CARRIER, ERROR, CONNECT <RATE>
X2	Enable	Disable	OK, RING, NO CARRIER, ERROR, NODIALTONE, CONNECT <RATE>
X3	Disable	Enable	OK, RING, NO CARRIER, ERROR, BUSY, CONNECT <RATE>, BLACKLISTED
X4 (default)	Enable	Enable	OK, RING, NO CARRIER, ERROR, NODIALTONE, BUSY, CONNECT <RATE>, DELAYED, BLACKLISTED, REORDER, WARBLE, CALL WAITING DETECTED

X5	Enable	Enable	OK, RING, NO CARRIER, ERROR, NODIALTONE, BUSY, CONNECT <RATE>, RRING, NO BONGTONE, DELAYED, BLACKLISTED, REORDER, WARBLE, CALL WAITING DETECTED

Dial tone detect

Disabled: The modem dials a call regardless of whether it detects a dial tone.

Enabled: The modem dials only upon detection of a dial tone, and disconnects the call if the dial tone is not detected within 10 seconds.

Busy tone detect

Disabled: The modem ignores any busy tones it receives.

Enabled: The modem monitors for busy tones.

Result Codes:

OK n=0,1,2,3,4,5

ERROR Otherwise

Zn Recall stored profile

The modem performs a soft reset and restores (recalls) the configuration profile according to the parameter supplied. If no parameter is specified, zero is assumed. Either Z0 or Z1 restores the profile.

Result Codes:

OK n=0,1

ERROR Otherwise

&Cn Data Carrier Detect (DCD) control

Data Carrier Detect is a signal from the modem to the computer indicating that a carrier signal is being received from a remote modem. DCD normally turns off when the modem no longer detects the carrier signal.

&C0 The state of the carrier from the remote modem is ignored. DCD circuit is always on.

&C1 DCD turns on when the remote modem's carrier signal is detected, and off when the carrier signal is not detected (default).

Result Codes:

OK n=0,1

ERROR Otherwise

&Dn DTR control

This command interprets how the modem responds to the state of the DTR signal and changes to the DTR signal.

&D0 Ignore. The modem ignores the true status of DTR and treats it as always on. This should only be used if your communication software does not provide DTR to the modem

&D1 If the DTR signal is not detected while in on-line data mode, the modem enters command mode, issues an **OK** result code, and remains connected.

&D2 If the DTR signal is not detected while in on-line data mode, the modem disconnects (default).

&D3 Reset on the on-to-off DTR transition.

Result Codes:

OK n=0,1,2,3

ERROR Otherwise

&F Load factory settings

This command loads the configuration stored and programmed at the factory. This operation replaces all of the command options and the S-register settings in the active configuration with factory values.

&F Recall factory setting as active configuration.

&Gn V.22bis guard tone control

This command determines which guard tone, if any, to transmit while transmitting in the high band (answer mode). This command is only used in V.22 and V.22bis mode. This option is not used in North America and is for international use only.

&G0 Guard tone disabled (default).

&G1 Sets guard tone to 550 Hz.

&G2 Sets guard tone to 1800 Hz.

Result Codes:

OK n=0,1,2

ERROR Otherwise

&Kn Local flow control selection

&K0 Disable flow control.

&K3 Enable CTS/RTS flow control (default).

&K4 Enable XON/XOFF flow control.

Result Codes:

OK n=0,3,4

ERROR Otherwise

&Pn Select Pulse Dial Make/Break Ratio (WW)

&P0 Selects 39% - 61% make/break ratio at 10 pulses per second.

&P1 Selects 33% - 67% make/break ratio at 10 pulses per second.

&P2 Selects 33% - 67% make/break ratio at 20 pulses per second.

Result Codes:

OK n=0,1,2

ERROR Otherwise

&Tn Self-test commands

These tests can help to isolate problems if you experience periodic data loss or random errors.

&T0 Abort. Stops any test in progress.

&T1 Local analog loop. This test verifies modem operation, as well as the connection between the modem and computer. Any data entered at the local DTE is modulated, then demodulated, and returned to the local DTE. To work properly, the modem must be off-line.

Result Codes:

OK n=0

CONNECT n=1

ERROR Otherwise

&V Display Current Configuration

This command displays the current configuration of the modem. If nonvolatile memory is supported the stored profiles are displayed as well.

&V View profiles.

&W Store current configuration

Saves the current (active) configuration (profile), including S-Registers.

The current configuration comprises a list of storable parameters illustrated in the **&V** command. These settings are restored to the active configuration upon receiving a **Zn** command or at power up. Refer to the **&V** command.

&W Stores the current configuration.

&Zn=x Store telephone number

This command is used to store up to four dialing strings in the modem's nonvolatile memory for later dialing. The format for the command is **&Zn**="stored number" where n is the location 0-3 to which the number should be written. The dial string may contain up to 34 characters. The ATDS=n command dials using the string stored in location n.

Result codes:

OK n=0, 1, 2, 3

ERROR Otherwise

\Nn Error control mode selection

This command determines the type of error control used by the modem when sending or receiving data.

\N0 Buffer mode. No error control.

\N1 Direct mode.

\N2 MNP or disconnect mode. The modem attempts to connect using MNP2-4 error control procedures. If this fails, the modem disconnects.

This is also known as MNP reliable mode.

\N3 V.42, MNP, or buffered (default).

The modem attempts to connect in V.42 error control mode. If this fails, it attempts to connect in MNP mode. If this fails, it connects in buffer mode and continues operation. This is also known as V.42/MNP auto reliable mode (same as **&Q5**).

\N4 V.42 or disconnect. The modem attempts to connect in V.42 error control mode. If this fails, the modem disconnects.

\N5 V.42. MNP or buffered (same as **\N3**).

\N7 V.42. MNP or buffered (same as **\N3**).

Result Codes:

OK n=0,1,2,3,4,5,7

ERROR Otherwise

\Qn Local flow control selection

\Q0 Disable flow control.

\Q1 XON/XOFF software flow control.

\Q3 CTS/RTS to DTE (default).

Result Codes:

OK n=0,1,3

ERROR Otherwise

\Vn Protocol result code

\V0 Disable protocol result code appended to DCE speed.

\V1 Enable protocol result code appended to DCE speed (default).

Result Codes:

OK n=0,1

ERROR Otherwise

%B View numbers in blacklist

If blacklisting is in effect, this command displays the numbers for which the last call attempted in the past two hours failed. The ERROR result code appears in regions that do not require blacklisting.

%Cn Data compression control

This command determines the operation of V.42bis and MNP class 5 data compression. On-line changes do not take effect until a disconnect occurs first.

%C0 V.42bis/MNP 5 disabled. No data compression.

%C3 V.42bis/MNP 5 enabled. Data compression enabled (default).

Result Codes:

OK n=0,3

ERROR Otherwise

S-registers

S-registers contain the settings that determine how a number of functions of the internal modem operate. For example, how many times to let the telephone ring before the modem answers and how long to wait before it hangs up if a connection fails. You can also customize certain AT commands such as the escape sequence and command line termination.

The contents of the registers are changed automatically when you modify corresponding settings in your communication software. If you choose, however, you can display and edit the contents of the registers manually when the modem is in command mode. If the value is out of the acceptable range, then an error is generated.

This chapter describes the settings for each S-register.

S-register values

The format for displaying the value of an S-register is:

ATSn?

where **n** is the register number. After you type in the register press **Enter**.

The format for modifying the value of an S-register is:

ATSn=r

where **n** is the register number, and **r** is the new register value. After you type in the register and its new value press **Enter**.

NOTE: *Some registers vary from one country/region to another.*

S0 Auto answer ring number

This register determines the number of rings the modem will count before automatically answering a call. Enter 0 (zero) if you do not want the modem to automatically answer at all. When disabled, the modem can only answer with an ATA command.

Range: 0-255

Default: 0

Units: rings

S1 Ring counter

This register is read only. The value of S1 is incremented with each ring. If no ring occurs over a six-second interval, this register is cleared.

Range: 0-225

Default: 0

Units: rings

S2 AT escape character (user defined)

This register determines the ASCII values used for an escape sequence. The default is the + character. The escape sequence allows the modem to exit data mode and enter command mode when on-line. Values greater than 127 disable the escape sequence.

Range: 0-255, ASCII decimal

Default: 43

Units: ASCII

S3 Command line termination character (user defined)

This register determines the ASCII values as the carriage return character. This character is used to end command lines and result codes.

Range: 0-127, ASCII decimal

Default: 13 (carriage return)

Units: ASCII

S4 Response formatting character (user defined)

This register determines the ASCII value used as the line feed character. The modem uses a line feed character in command mode when it responds to the computer.

Range: 0-127, ASCII decimal

Default: 10 (line feed)

Units: ASCII

S5 Command line editing character (user defined)

This register sets the character recognized as a backspace and pertains to asynchronous only. The modem will not recognize the backspace character if it is set to a value that is greater than 32 ASCII. This character can be used to edit a command line. When the echo command is enabled, the modem echoes back to the local DTE the backspace character, an ASCII space character, and a second backspace character. This means a total of three characters are transmitted each time the modem processes the backspace character.

Range: 0-127, ASCII decimal

Default: 8 (backspace)

Units: ASCII

S6 Wait before dialing

This register sets the length of time, in seconds, that the modem must wait (pause) after going off-hook before dialing the first digit of the telephone number. The modem always pauses for a minimum of two seconds, even if the value of S6 is less that two seconds. The wait for dial tone call progress feature (W dial modifier in the dial string) will override the value in register S6. This operation, however, may be affected by some ATX options according to country/region restrictions. In some countries/ regions, S6 will set dial tone detect time.

Range: 3-255

Default: 3

Units: seconds

S7 Connection completion time-out

This register sets the time, in seconds, that the modem must wait before hanging up because carrier is not detected. The timer is started when the modem finishes dialing (originate), or goes off-hook (answer). In originate mode, the timer is reset upon detection of an answer tone if allowed by county restriction. The timer also specifies the wait for silence time for the @ dial modifier in seconds. S7 is not associated with the W dial modifier.

Range: 1-255

Default: 50

Units: seconds

S8 Comma pause time

This register sets the time, in seconds, that the modem must pause when it encounters a comma (,) in the dial command string. In some countries/ regions, S8 will set both wait before dialing and comma pause time.

Range: 0-255

Default: 2

Units: seconds

S11 DTMF dialing speed

This register determines the dialing speed which is prefixed for each country/region.

Range: 50-255

Default: 95

Units: .001 seconds

S12 Escape guard time

This register sets the value (in 20 millisecond increments) for the required pause after the escape sequence.

Range: 0-255

Default: 50

Units: .02 seconds

S37 Dial line rate

S37=0 (default)	maximum modem speed
S37=1	reserved
S37=2	1200/75 bps
S37=3	300 bps
S37=4	reserved
S37=5	1200 bps
S37=6	2400 bps
S37=7	4800 bps
S37=8	7200 bps
S37=9	9600 bps
S37=10	12000 bps
S37=11	14400 bps
S37=12	16800 bps
S37=13	19200 bps
S37=14	21600 bps
S37=15	24000 bps
S37=16	26400 bps
S37=17	28800 bps
S37=18	31200 bps
S37=19	33600 bps

AT command set result codes

The following table shows the result codes.

The result code summary

Result Code	Numeric	Description
OK	0	Command executed
CONNECT	1	Modem connected to line
RING	2	A ring signal has been detected
NO CARRIER	3	Modem lost carrier signal, or does not detect carrier signal, or does not detect answer tone
ERROR	4	Invalid command
CONNECT 1200 EC*1	5	Connection at 1200 bps
NO DIAL TONE	6	No dial tone detected
BUSY	7	Busy signal detected
NO ANSWER	8	No quiet answer
CONNECT 2400 EC*1	10	Connection at 2400 bps
CONNECT 4800 EC*1	11	Connection at 4800 bps
CONNECT 9600 EC*1	12	Connection at 9600 bps
CONNECT 14400 EC*1	13	Connection at 14400 bps
CONNECT 19200 EC*1	14	Connection at 19200 bps
CONNECT 7200 EC*1	24	Connection at 7200 bps
CONNECT 12000 EC*1	25	Connection at 12000 bps
CONNECT 16800 EC*1	86	Connection at 16800 bps
CONNECT 300 EC*1	40	Connection at 300 bps
CONNECT 21600 EC*1	55	Connection at 21600 bps
CONNECT 24000 EC*1	56	Connection at 24000 bps
CONNECT 26400 EC*1	57	Connection at 26400 bps
CONNECT 28800 EC*1	58	Connection at 28800 bps
CONNECT 31200 EC*1	59	Connection at 31200 bps
CONNECT 33600 EC*1	60	Connection at 33600 bps

Result Code	Numeric	Description
DELAYED*2	88	Delay is in effect for the dialed number
BLACKLISTED*2	89	Dialed number is blacklisted
BLACKLISTFULL*2	90	Blacklist is full

*1: *EC only appears when the Extended Result Codes configuration option is enabled. EC is replaced by one of the following symbols, depending upon the error control method used:*

V.42bis - V.42 error control and V.42bis data compression.

V.42 - V.42 error control only.

MNP 5 - MNP class 4 error control and MNP class 5 data compression.

MNP 4 - MNP class 4 error control only.

NoEC - No error control protocol.

*2: *In some countries/regions, these result codes may not appear.*

V.90

The TOSHIBA internal modem uses V.90 technology. The modem is capable of downstream speeds of 56Kbps (kilobits per second) when connected to an Internet service provider that supports V.90. As with any modem, the actual throughput (speed of data transfer) depends on analog telephone line conditions, which can vary considerably. Therefore, many users will experience throughput in the range of 32-44Kbps under normal telephone line conditions. Upstream data flows at the V.34 rate.

> ***NOTE:*** *V.90 rates can be achieved only when one V.90 capable modem is connected to another. The TOSHIBA Internal modem will select automatically V.34 if the remote modem lacks V.90 capability or if a combination of network and/or phone line conditions prevent V.90 connection.*

V.90 mode

Function	Transmission speed
Data V.90	From 56K (maximum) to 28Kbps (minimum) Reception only

Table E-1 Result codes for a V.90 connection

No.	Result code	Description
70	CONNECT 32000 EC*	Connection at 32000 bits/s
72	CONNECT 36000 EC*	Connection at 36000 bits/s
74	CONNECT 40000 EC*	Connection at 40000 bits/s
76	CONNECT 44000 EC*	Connection at 44000 bits/s
78	CONNECT 48000 EC*	Connection at 48000 bits/s
80	CONNECT 52000 EC*	Connection at 52000 bits/s
82	CONNECT 56000 EC*	Connection at 56000 bits/s
100	CONNECT 28000 EC*	Connection at 28000 bits/s
101	CONNECT 29333 EC*	Connection at 29333 bits/s
102	CONNECT 30666 EC*	Connection at 30666 bits/s
103	CONNECT 33333 EC*	Connection at 33333 bits/s
104	CONNECT 34666 EC*	Connection at 34666 bits/s
105	CONNECT 37333 EC*	Connection at 37333 bits/s
106	CONNECT 38666 EC*	Connection at 38666 bits/s
107	CONNECT 41333 EC*	Connection at 41333 bits/s
108	CONNECT 42666 EC*	Connection at 42666 bits/s
109	CONNECT 45333 EC*	Connection at 45333 bits/s
110	CONNECT 46666 EC*	Connection at 46666 bits/s
111	CONNECT 49333 EC*	Connection at 49333 bits/s
112	CONNECT 50666 EC*	Connection at 50666 bits/s
113	CONNECT 53333 EC*	Connection at 53333 bits/s
114	CONNECT 54666 EC*	Connection at 54666 bits/s

* EC stands for the Error Control method, which appears only when the extended result codes configuration option is enabled. EC is replaced by one of the following symbols, depending on the error control method used.

V42bis	V.42 error control and V.42bis data compression
V42	V.42 error control only
NoEC	No error control protocol

AT Command

-V90=* V.90 Dial Line Rate

-V90 sets the maximum V.90 downstream that the modem attempts to connect.

-V90=0 V.90 disabled

-V90=1 V.90 enabled: automatic speed selection - maximum modem speed (default)

Wireless LAN

This appendix describes Wireless LAN features and TOSHIBA Wireless LAN card specifications. For details on Wireless LAN settings, refer to the LAN Card Settings and Client Manager help file. These references have the latest information.

About TOSHIBA Wireless solution

The Wireless LAN card Kit enables you to:

- Connect your computer to a peer-to-peer workgroup of Wireless computing devices.
- Connect your computer to a Local Area Network (LAN) Infrastructure that includes Wireless LAN Access Points, or other IEEE802.11 compliant LAN systems.
- Expand the capabilities of your Wireless LAN Access Points, to support Wireless devices that have been equipped with Wireless LAN card.

NOTE: *The internal Wireless LAN card can't be used with the TOSHIBA Wireless LAN PC card.*

Peer-to-peer workgroup

The peer-to-peer workgroup configuration enables you to quickly set up a small Wireless workgroup, where the workgroup participants can exchange files using features such as *Files and Printer Sharing* as supported by Microsoft Networking.

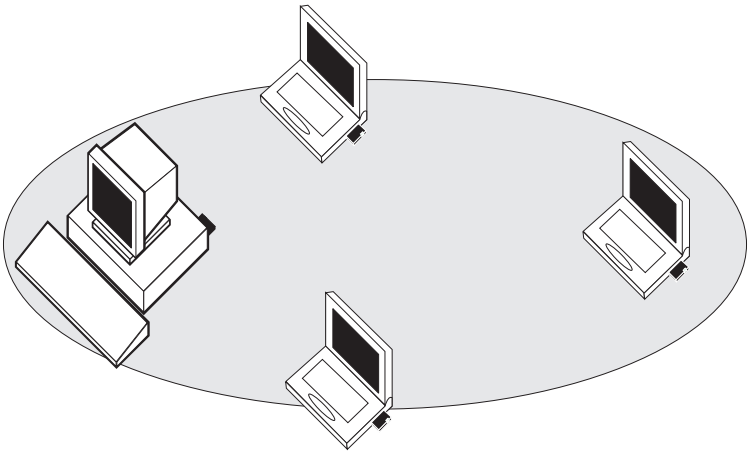


Figure F-1 Peer-to-peer Wireless workgroup

You can use this option to set up a temporary or ad-hoc network in environment where no access points are available, for example in Small Office/Home Office (SOHO) environments.

As long as the stations are within range of one another, this is the easiest and least expensive way to set up a Wireless network.

Enterprise networking

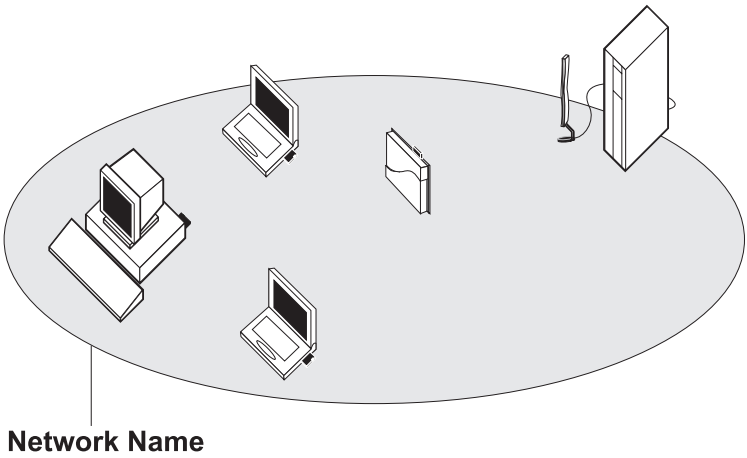


Figure F-2 Stand-alone Wireless LAN

With the Wireless LAN Access Points you can connect to a corporate Local Area Network (LAN) infrastructure to have Wireless access to all network facilities. LAN Infrastructures may either be.

- Stand-alone Wireless LANs as pictured in Figure F-2

- Wireless network infrastructures connected to an existing Ethernet network as pictured in Figure F-3.

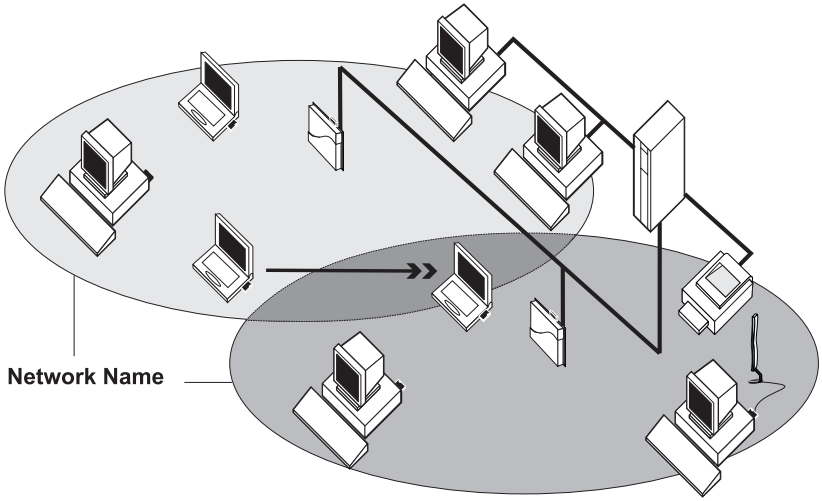


Figure F-3 LAN Infrastructure

Configuration

The Wireless LAN card functions like any standard wired Ethernet card except it gives you the freedom of Wireless connections.

Where an Ethernet card requires a cable connection to a hub and/or patch panel, the cable physically limits the location of the wired connection.

A Wireless LAN allows you connect your computer to a Local Area Network (LAN) from anywhere within the Wireless coverage area.

> ***NOTE:*** *The Wireless LAN card is a radio product. Refer to the flyer* Information to the User *for regulatory information that may apply in your country/region.*

Wireless LAN card features

The TOSHIBA Wireless LAN mini-PCI card is a Wireless network card that fits into a mini-PCI Type IIIA slot.

Wireless LAN card types

The Wireless LAN card is a Wireless network card that complies with the IEEE 802.11 standard on Wireless LANs (Revision B). The Wireless LAN card supports data rates up to 11 Mbit/s.

is a Certification Mark of the Wireless Ethernet Compatibility Alliance, Inc.

- Wi-Fi (Wireless Fidelity) certified by the Wireless Ethernet Compatibility Alliance (WECA). This means that your Wireless hardware will communicate with other vendors' IEEE 802.11 compliant Wireless LAN products. The above indicated mark is a Certification Mark of the Wireless Ethernet Compatibility Alliance, Inc.,
- Fully compatible with any other Wireless LAN system based on Direct Sequence Spread Spectrum (DSSS) radio technology that complies with the IEEE 802.11 standard on Wireless LANs (Revision B).

Wireless LAN cards

The Wireless LAN card supports the following Wireless LAN features:

- Automatic Transmit Rate Select mechanism in the transmit range of 11, 5.5, 2 and 1 Mbit/s.
- Frequency Channel Selection (2.4 GHz).
- Roaming over multiple channels.
- Card Power Management.
- Wired Equivalent Privacy (WEP) data encryption, based on the 128 bit RC4 encryption algorithm.

Card specifications

Table F-1 Physical specifications

Form Factor	Mini-PCI TypeIIIA	
Dimensions		
Weight		
Temperature and Humidity		
Operation	0 to 55 C	Maximum humidity 95%
Transit	-20 to 70 C	15 to 95% (no condensation)
Storage	-10 to 60 C	10 to 90% (no condensation)

Although the card may still operate in the range of –20 to 70 C, operation outside the range of 0 to 55 C may no longer be according to specifications.

Table F-2 Power Characteristic

Doze Mode	45mA
Receive Mode	250mA
Transmit Mode	350mA
Power Supply	3.3V

Table F-3 Networking Characteristics

Compatibility	■ IEEE 802.11 Standard for Wireless LANS (DSSS) ■ Wi-Fi (Wireless Fidelity) certified by the Wireless Ethernet Compatibility Alliance (WECA)
Network Operating System	■ Microsoft Windows® Networking
Host Operating System	Microsoft Windows® XP ■ NDIS5.1 Miniport Driver

Media Access Protocol	CSMA/CA (Collision Avoidance) with Acknowledgment (ACK)
Data Rate	■ High 11 Mb/s ■ Medium 5.5 Mb/s ■ Standard 2 Mb/s ■ Low 1 Mb/s The cards use an automatic Transmit Rate Select mechanism.

Radio characteristics

Radio characteristics of Wireless LAN cards may vary according to:

- Country/region where the product was purchased
- Type of product

Wireless communication is often subject to local radio regulations. Although Wireless LAN networking products have been designed for operation in the license-free 2.4 GHz band, local radio regulations may impose limitations on the use of Wireless communication equipment.

> ***NOTE:*** *Refer to the flyer* Information to the User *for regulatory information that may apply in your country/region.*

Table F-4 Radio characteristics

R-F Frequency Band	2.4GHz (2400-2483.5 MHz)			
Modulation Technique	Direct Sequence Spread Spectrum ■ CCK for High & Medium Transmit Rate ■ DQPSK for Standard Transmit Rate ■ DBPSK for Low Transmit Rate			
Spreading	11-chip Barker Sequence			
Bit Error Rate (BER)	Better than 10^{-5}			
Nominal Output Power	15 dBm			
Transmit Rate	High Speed 11 Mb/s	Medium Speed 5.5 Mb/s	Standard Speed 2 Mb/s	Low Speed 1Mb/s
Receiver Sensitivity	-83 dBm	-87 dBm	-91 dBm	-94 dBm
Delay Spread (at FER of <1%)	65 ns	225 ns	400 ns	500 ns

The range of the Wireless signal is related to the Transmit Rate of the Wireless communication. Communications at lower Transmit range may travel longer distances.

> ***NOTE:*** *The range values listed in Table F-4 are typical distances as measured at the TOSHIBA Wireless LAN laboratories. These values provide rule-of-thumb guides. They may vary according to the actual radio conditions at the location where the Wireless LAN product is installed.*

- The range of your Wireless devices can be affected when the antennas are placed near metal surfaces and solid high-density materials.
- Range is also affected by obstacles in the signal path of the radio that may either absorb or reflect the radio signal.

Table F-4 lists the typical ranges when used indoors in office environments such as the following:

- In **Open Office environments**, where antennas can see each other, i.e. there are no physical obstructions between them.
- In **Semi-open Office environments**, where work space is divided by shoulder-height, hollow wall elements; antennas are at desktop level.
- In **Closed Office environments**, work space is separated by floor-to-ceiling solid walls.

Supported frequency sub-bands

Subject to the radio regulations that apply in your country/region, your Wireless LAN card may support a different set of 2.4 GHz channels (see Table F-5).

Consult your Authorized Wireless LAN or TOSHIBA Sales office for information about the radio regulations that apply in your country/region.

Table F-5 Wireless IEEE 802.11 Channels Sets

Frequency Range	2400-2483.5 MHz
Channel ID	
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	**2457***
11	2462

* Factory-set default channels

When installing Wireless LAN cards, the channel configuration is managed as follows:

- For Wireless clients that operate in a Wireless LAN Infrastructure, the Wireless LAN card will automatically start operation at the channel identified by the Wireless LAN Access Point. When roaming between different access points the station can dynamically switch to another channel if required.
- For Wireless LAN cards installed in Wireless clients operating in a peer-to-peer mode, the card will use the default channel 10.
- In a Wireless LAN Access Point, the Wireless LAN card will use the factory-set default channel (printed in bold), unless the LAN Administrator selected a different channel when configuring the Wireless LAN Access Point device.

AC Power Cord and Connectors

The power cord's AC input plug must be compatible with the various international AC power outlets and the cord must meet the standards for the country/region in which it is used. All cords must meet the following specifications:

Length:	Minimum 2 meters
Wire size:	Minimum 0.75 mm^2
Current rating:	Minimum 2.5 amperes
Voltage rating:	125 or 250 VAC (depending on country/region's power standards)

Certification agencies

U.S. and Canada: UL listed and CSA certified

No. 18 AWG, Type SVT or SPT-2 two conductor

Europe:

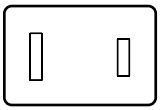
Austria:	OVE	Italy:	IMQ
Belgium:	CEBEC	The Netherlands:	KEMA
Denmark:	DEMKO	Norway:	NEMKO
Finland:	SETI	Sweden:	SEMKO
France:	UTE	Switzerland:	SEV
Germany:	VDE	United Kingdom:	BSI
Australia:	AS		
Japan:	DENANHO		

In Europe, power cords must be VDE type, H05VVH2-F and two conductor.

For the United States and Canada, plug configuration must be a 2-15P (250 V) or 1-15P (125 V) as designated in the U.S. National Electrical code handbook and the Canadian Electrical Code Part II.

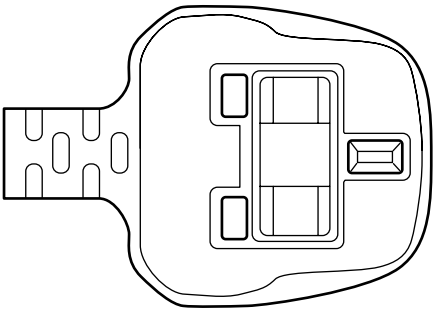
The following illustrations show the plug shapes for the U.S.A. and Canada, the United Kingdom, Australia and Europe.

USA and Canada



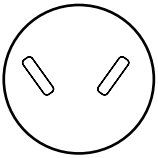
UL approved
CSA approved

United Kingdom



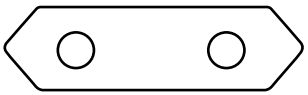
BS approved

Australia



AS approved

Europe



Approved by the appropriate agency

Internal Modem Guide

This appendix describes how to install and the remove the internal modem.

CAUTIONS: *1. Do not remove the base cover except to remove or install the internal modem or to check the PTT label.*

2. Do not disassemble the computer beyond the steps described in this instruction or touch any components not specifically described.

3. Always remove the Battery Pack and disconnect the AC Adaptor before removing the base cover.

4. Be careful not to drop any screws or other foreign matter into the computer. Metal or other foreign matter can damage the computer.

Installing the internal modem

NOTE: *The internal modem is preinstalled. The following is for information only.*

To install the modem board, follow the steps below.

1. Save your data, quit Windows and turn off the power.
2. Disconnect the AC Adaptor and any other peripheral devices.
3. Turn the computer upside down.
4. Remove one screw securing the modem socket cover.
5. Lift off the modem socket cover.
6. Connect the modem cable to the modem board.
7. Remove two screws from the modem board socket.
8. Align the connectors and seat the modem board.
9. Secure the modem board with the two screws removed in step 7.
10. Seat the modem socket cover and secure it with one screw.

Removing the internal modem

To remove the internal modem.

1. Save your data, quit Windows and turn off the power.
2. Disconnect the AC Adaptor and any other peripheral devices.
3. Turn the computer upside down.
4. Remove the battery.
5. Remove one screw securing the modem socket cover.
6. Lift off the modem socket cover.
7. Remove two screws securing the modem board. Store the screws in a safe place. Be careful not to lose them
8. Disconnect the modem board and lift it out.
9. Disconnect the modem cable.
10. Seat the modem socket cover and secure it with one screw.

The internal modem is approved by Japan Approvals Institute for Telecommunications Equipment.

Parts Numbers

The computer configuration and parts numbers, printed on a label on the bottom of the computer, indicate the CPU, LCD, memory, HDD and communication devices.

Configurations

The following table shows the computer configuration indicated on a label. Shaded areas indicate abbreviations used on the label. The explanations are to the left of the shading. Abbreviations are not limited to those in this chart. They may change without notice.

CPU		LCD		Memory		HDD		Communication	
	Pentium III								
1330	P1330	12"TFT-XGA	12TX	128MB	128M	20G	20	Wireless LAN	WL
				128MB+128MB	256M	30G	30	Bluetooth	BT
				256MB	256M	40G	40	Wireless LAN /Bluetooth	WL/BT
				256MB+128M	384M	60G	60		
				256MB+256MB	512M				
				512MB	512M				
				512MB+128MB	640M				
				512MB+256MB	768M				
				512MB+512MB	1024M				

* Figures indicate the CPU operating speed in megahertz. For example, P1330 means Mobile Intel® Pentium® III processor 1.33 GHz-M .

Glossary

The terms in this glossary cover the topics discussed in this manual. Alternate naming is included for reference.

Abbreviations

AC: alternating current

ANSI: American National Standards Institute

APM: advanced power manager

ASCII: American Standard Code for Information Interchange

BIOS: basic input output system

CMOS: complementary metal-oxide semiconductor

CPU: central processing unit

CRT: cathode ray tube

DAA: Data Access Arrangement

DC: direct current

DDC: display data channel

DMA: direct memory access

DOS: disk operating system

DVI: Digital Visual Interface

ECP: extended capabilities port

EGA: enhanced graphics adaptor

FDD: floppy disk drive

FIR: fast infrared

HDD: hard disk drive

IDE: integrated drive electronics

I/O: input/output

IrDA: Infrared Data Association

IRQ: interrupt request

KB: kilobyte

LCD: liquid crystal display

LED: light emitting diode

LSI: large scale integration

MDA: monochrome display adaptor

MS-DOS: Microsoft Disk Operating System

OCR: optical character recognition (reader)

PCB: printed circuit board

PCI: peripheral component interconnect

RAM: random access memory

RGB: red, green, and blue

ROM: read only memory

RTC: real time clock.

SCSI: small computer system interface

SIO: serial input/output

SVGA: super video graphics adaptor

TFT: thin-film transistor

UART: universal asynchronous receiver/transmitter

USB: Universal Serial Bus

(Abbreviations continued)

VESA: Video Electronic Standards Association

VGA: video graphics array

VRT: voltage reduction technology

A

adaptor: A device that provides an interface between two dissimilar electronic devices. For example, the AC adaptor modifies the power from a wall outlet for use by the computer. This term also refers to the add-in circuit cards that control external devices, such as video monitors and magnetic tape devices.

allocate: To assign a space or function for a specific task.

alphanumeric: Keyboard characters including letters, numbers and other symbols, such as punctuation marks or mathematical symbols.

alternating current (AC): Electric current that reverses its direction of flow at regular intervals.

analog signal: A signal whose characteristics such as amplitude and frequency vary in proportion to (are an analog of) the value to be transmitted. Voice communications are analog signals.

ANSI: American National Standards Institute. An organization established to adopt and define standards for a variety of technical disciplines. For example, ANSI defined the ASCII standard and other information processing requirements.

antistatic: A material used to prevent the buildup of static electricity.

application: A group of programs that together are used for a specific task such as accounting, financial planning, spreadsheets, word processing, and games, etc.

ASCII: American Standard Code for Information Interchange. ASCII code is a set of 256 binary codes that represent the most commonly used letters, numbers, and symbols.

async: Short for asynchronous.

asynchronous: Lacking regular time relationship. As applied to computer communications, asynchronous refers to the method of transmitting data that does not require a steady stream of bits to be transmitted at regular time intervals.

AUTOEXEC.BAT: A batch file that executes a series of MS-DOS commands and programs each time you start the computer.

B

backup: A duplicate copy of files kept as a spare in case the original is destroyed.

batch file: A file that can be executed from the system prompt containing a sequence of operating system commands or executable files. See also AUTOEXEC.BAT.

binary: The base two number system composed of zeros and ones (off or on), used by most digital computers. The right most digit of a binary number has a value of 1, the next a value of 2, then 4, 8, 16, and so on. For example, the binary number 101 has a value of 5. *See also* ASCII.

BIOS: Basic Input Output System. The firmware that controls data flow within the computer. *See also* firmware.

bit: Derived from "binary digit," the basic unit of information used by the computer. It is either zero or one. Eight bits is one byte. *See also* byte.

Bluetooth: A short-range radio technology designed to simplify wireless communication among computers, communication devices and the Internet.

board: A circuit board. An internal card containing electronic components, called chips, which perform a specific function or increase the capabilities of the system.

boot: Short for bootstrap. A program that starts or restarts the computer. The program reads instructions from a storage device into the computer's memory.

bps: Bits per second. Typically used to describe the data transmission speed of a modem.

buffer: The portion of the computer's memory where data is temporarily stored. Buffers often compensate for differences in the rate of flow from one device to another.

bus: An interface for transmission of signals, data or electric power.

byte: The representation of a single character. A sequence of eight bits treated as a single unit; also the smallest addressable unit within the system.

C

cache memory: High speed memory which stores data that increases processor speed and data transfer rate. When the CPU reads data from main memory, it stores a copy of this data in cache memory. The next time the CPU needs that same data, it looks for it in the cache memory rather than the main memory, which saves time. The computer has two cache levels. Level one is incorporated into the processor and level two resides in external memory.

capacity: The amount of data that can be stored on a magnetic storage device such as a diskette (floppy disk) or hard disk. It is usually described in terms of kilobytes (KB), where one KB = 1024 bytes and megabytes (MB), where one MB = 1024KB.

card: Synonym for board. *See* board.

CardBus: An industry standard bus for 32-bit PC Cards.

CD-ROM: A Compact Disk-Read Only Memory is a high capacity disk that can be read from but not written to. The CD-ROM drive uses a laser, rather than magnetic heads, to read data from the disk.

character: Any letter, number, punctuation mark, or symbol used by the computer. Also synonymous with byte.

chassis: The frame containing the computer.

chip: A small semiconductor containing computer logic and circuitry for processing, memory, input/output functions and controlling other chips.

CMOS: Complementary Metal-Oxide Semiconductor. An electronic circuit fabricated on a silicon wafer that requires very little power. Integrated circuits implemented in CMOS technology can be tightly packaged and are highly reliable.

cold start: Starting a computer that is currently off (turning on the power).

commands: Instructions you enter at the terminal keyboard that direct the actions of the computer or its peripheral devices.

communications: The means by which a computer transmits and receives data to and from another computer or device.

Compact Flash: A small removable mass storage device, designed with flash technology, a non-volatile storage solution that does not require a battery to retain data indefinitely.

compatibility: 1) The ability of one computer to accept and process data in the same manner as another computer without modifying the data or the media upon which it is being transferred. 2) the ability of one device to connect to or communicate with another system or component.

components: Elements or parts (of a system) which make up the whole (system).

computer program: A set of instructions written for a computer that enable it to achieve a desired result.

computer system: A combination of hardware, software, firmware, and peripheral components assembled to process data into useful information.

configuration: The specific components in your system (such as the terminal, printer, and disk drives) and the settings that define how your

system works. You use the HW Setup program to control your system configuration.

control keys: A key or sequence of keys you enter from the keyboard to initiate a particular function within a program.

controller: Built-in hardware and software that controls the functions of a specific internal or peripheral device (e.g. keyboard controller).

co-processor: A circuit built into the processor that is dedicated to intensive math calculations.

CPS: Characters per second. Typically used to indicate the transmission speed of a printer.

CPU: Central processing unit. The portion of the computer that interprets and executes instructions.

CRT: Cathode Ray Tube. A vacuum tube in which beams projected on a fluorescent screen-producing luminous spots. An example is the television set.

cursor: A small, blinking rectangle or line that indicates the current position on the display screen.

D

data: Information that is factual, measurable or statistical that a computer can process, store, or retrieve.

data access arrangement: Circuitry that isolates a modem or other device from telephone lines.

data bits: A data communications parameter controlling the number of bits (binary digits) used to make up a byte. If data bits = 7 the computer can generate 128 unique characters. If data bits = 8 the computer can generate 256 unique characters.

DC: Direct Current. Electric current that flows in one direction. This type of power is usually supplied by batteries.

default: The parameter value automatically selected by the system when you or the program do not provide instructions. Also called a preset value.

delete: To remove data from a disk or other data storage device. Synonymous with erase.

device driver: A program that controls communication between a specific peripheral device and the computer. The CONFIG.SYS file contains device drivers that MS-DOS loads when you turn the computer on.

dialog box: A window that accepts user input to make system settings or record other information.

disk drive: The device that randomly accesses information on a disk and copies it to the computer's memory. It also writes data from memory to the disk. To accomplish these tasks, the

unit physically rotates the disk at high speed past a read-write head.

disk storage: Storing data on magnetic disk. Data is arranged on concentric tracks much like a phonograph record.

diskette: A removable disk that stores magnetically encoded data used on a microcomputer. Also called floppy disk.

display: A CRT, plasma screen, LCD, or other image producing device used to view computer output.

documentation: The set of manual and/or other instructions written for the users of a computer system or application. Computer system documentation typically includes procedural and tutorial information as well as system functions.

DOS: Disk operating system. *See* operating system.

driver: A software program, generally part of the operating system, that controls a specific piece of hardware (frequently a peripheral device such as a printer or mouse).

E

echo: To send back a reflection of the transmitted data to the sending device. You can display the information on the screen, or output it to the printer, or both. When a computer receives back data it transmitted to a CRT (or other peripheral device) and then retransmits the data to printer, the printer is said to echo the CRT.

erase: *See* delete.

escape: 1) A code (ASCII code 27), signaling the computer that what follows are commands; used with peripheral devices such as printers and modems. 2) A means of aborting the task currently in progress.

escape guard time: A time before and after an escape code is sent to the modem which distinguishes between escapes that are part of the transmitted data, and escapes that are intended as a command to the modem.

execute: To interpret and execute an instruction.

Extended Capability Port: An industry standard that provides a data buffer, switchable forward and reverse data transmission, and run length encoding (RLE) support.

F

fast infrared: An industry standard that enables cableless infrared serial data transfer at speeds of up to 4 Mbps.

file: A collection of related information; a file can contain data, programs, or both.

firmware: A set of instructions built into the hardware which controls and

directs a microprocessor's activities.

fixed disk: *See* hard disk.

floppy disk: *See* diskette.

floppy disk drive (FDD): An electromechanical device that reads and writes to floppy disks. *See also* diskette.

Fn-esse: A TOSHIBA utility that lets you assign functions to hotkeys.

folder: An icon in Windows used to store documents or other folders.

format: The process of readying a blank disk for its first use. Formatting establishes the structure of the disk that the operating system expects before it writes files or programs onto the disk.

function keys: The keys labeled **F1** through **F12** that tell the computer to perform certain functions.

G

gigabyte (GB): A unit of data storage equal to 1024 megabytes. *See also* megabyte.

GND: Ground. An RS-232C signal used in the exchange of data between a computer and serial device.

graphics: The use of drawings, pictures, or other images, such as charts or graphs, to present information.

H

hard disk: A non-removable disk usually referred to as drive C. The factory installs this disk and only a trained engineer can remove it for servicing. Also called fixed disk.

hard disk drive (HDD): An electromechanical device that reads and writes a hard disk. *See also* hard disk.

hardware: The physical electronic and mechanical components of a computer system: typically, the computer itself, external disk drives, etc. *See also* software and firmware.

hertz: A unit of wave frequency that equals one cycle per second.

hexadecimal: The base 16 numbering system composed of the digits 0 through 9 and the letters A, B, C, D, E, and F.

host computer: The computer that controls, regulates, and transmits information to a device or another computer.

hot dock/undock: Connecting or disconnecting a device to or from the computer while the computer's power is turned on.

hotkey: The computer's feature in which certain keys in combination with the extended function key, **Fn**, can be used to set system parameters, such as speaker volume.

HW Setup: A TOSHIBA utility that lets you set the parameters for various hardware components.

I

icon: A small graphic image displayed on the screen or in the indicator panel. In Windows, an icon represents an object that the user can manipulate.

infrared port: A cableless communications capable of using infrared signals to send serial data.

input: The data or instructions you provide to a computer, communication device or other peripheral device from the keyboard or external or internal storage devices. The data sent (or output) by the sending computer is input for the receiving computer.

instruction: Statements or commands that specify how to perform a particular task.

interface: 1) Hardware and/or software components of a system used specifically to connect one system or device to another. 2) To physically connect one system or device to another to exchange information. 3) The point of contact between user, the computer, and the program, for example, the keyboard or a menu.

interrupt request: A signal that gives a component access to the processor.

I/O: Input/output. Refers to acceptance and transfer of data to and from a computer.

I/O devices: Equipment used to communicate with the computer and transfer data to and from it.

J

jumper: A small clip or wire that allows you to change the hardware characteristics by electrically connecting two points of a circuit.

K

K: Taken from the Greek word kilo, meaning 1000; often used as equivalent to 1024, or 2 raised to the 10th power. *See also* byte and kilobyte.

KB: *See* kilobyte.

keyboard: An input device containing switches that are activated by manually pressing marked keys. Each keystroke activates a switch that transmits a specific code to the computer. For each key, the transmitted code is, in turn, representative of the (ASCII) character marked on the key.

kilobyte (KB): A unit of data storage equal to 1024 bytes. *See also* byte and megabyte.

L

level 2 cache: *See* cache.

Light Emitting Diode (LED): A semiconductor device that emits light when a current is applied.

Liquid Crystal Display (LCD): Liquid crystal sealed between two sheets of glass coated with transparent conducting material. The viewing-side coating is etched into character forming segments with leads that extend to the edge of the glass. Applying a voltage between the glass sheets darkens the liquid crystal to provide contrast to lighted portions of the display.

LSI: Large Scale Integration. 1) A technology that allows the inclusion of up to 100,000 simple logic gates on a single chip. 2) An integrated circuit that uses the large scale integration.

M

main board: See motherboard.

megabyte (MB): A unit of data storage equal to 1024 kilobytes. *See also* kilobyte.

megahertz: A unit of wave frequency that equals 1 million cycles per second. *See also* hertz.

menu: A software interface that displays a list of options on the screen. Also called a screen.

microprocessor: A hardware component contained in a single integrated circuit that carries out instructions. Also called the central processing unit (CPU), one of the main parts of the computer.

mode: A method of operation, for example, the boot mode or the resume mode.

modem: Derived from modulator/demodulator, a device that converts (modulates) digital data for transmission over telephone lines and then converts modulated data (demodulates) to digital format where received.

monitor: A device that uses rows and columns of pixels to display alphanumeric characters or graphic images. *See* CRT.

motherboard: A name sometimes used to refer to the main printed circuit board in processing equipment. It usually contains integrated circuits that perform the processor's basic functions and provides connectors for adding other boards that perform special functions. Sometimes called a main board.

N

non-system disk: A formatted diskette (floppy disk) you can use to store programs and data but you cannot use to start the computer. *See* system disk.

nonvolatile memory: Memory, usually read-only (ROM), that is capable of permanently storing information. Turning the computer's power off does not alter data stored in nonvolatile memory.

numeric keypad overlay: A feature that allows you to use certain keys on the keyboard to perform numeric entry, or to control cursor and page movement.

O

OCR: Optical Character Recognition (reader). A technique or device that uses laser or visible light to identify characters and input them into a storage device.

OCR wand: A device that reads, using an optical device, hand written or machine printed symbols into a computer. *See also* OCR.

online state: A functional state of a peripheral device when it is ready to receive or transmit data.

operating system: A group of programs that controls the basic operation of a computer. Operating system functions include interpreting programs, creating data files, and controlling the transmission and receipt (input/output) of data to and from memory and peripheral devices.

output: The results of a computer operation. Output commonly indicates data 1) printed on paper, 2) displayed at a terminal, 3) sent through the serial port of internal modem, or 4) stored on some magnetic media.

P

parity: 1) The symmetrical relationship between two parameter values (integers) both of which are either on or off; odd or even; 0 or 1. 2) In serial communications, an error detection bit that is added to a group of data bits making the sum of the bits even or odd. Parity can be set to none, odd, or even.

password: A unique string of characters used to identify a specific user. The computer provides various levels of password protection such as user, supervisor and eject.

pel: The smallest area of the display that can be addressed by software. Equal in size to a pixel or group of pixels. *See* pixel.

peripheral component interconnect: An industry standard 32-bit bus.

peripheral device: An I/O device that is external to the central processor and/or main memory such as a printer or a mouse.

pixel: A picture element. The smallest dot that can be made on a display or printer. Also called a pel.

plug and play: A capability with Windows that enables the system to automatically recognize connections of external devices and make the necessary configurations in the computer.

port: The electrical connection through which the computer sends and receives data to and from devices or other computers.

printed circuit board (PCB): A hardware component of a processor to which integrated circuits and other components are attached. The board itself is typically flat and rectangular, and constructed of fiberglass, to form the attachment surface.

program: A set of instructions a computer can execute that enables it to achieve a desired result. See also application.

prompt: A message the computer provides indicating it is ready for or requires information or an action from you.

R

Radio frequency interference (RFI) shield: A metal shield enclosing the printed circuit boards of the printer or computer to prevent radio and TV interference. All computer equipment generates radio frequency signals. The FCC regulates the amount of signals a computing device can allow past its shielding. A Class A device is sufficient for office use. Class B provides a more stringent classification for home equipment use. TOSHIBA portable computers comply with Class B computing device regulations.

Random Access Memory (RAM): High speed memory within the computer circuitry that can be read or written to.

restart: Resetting a computer without turning it off (also called 'warm boot' or 'soft reset'). To restart the computer, press **Ctrl** + **Alt** + **Del** while the computer is on. See also boot.

RGB: Red, green, and blue. A device that uses three input signals, each activating an electron gun for a primary additive color (red, green, and blue) or port for using such a device. *See also* CRT.

RJ11: A modular telephone jack.

ROM: Read Only Memory**:** A

nonvolatile memory chip manufactured to contain information that controls the computer's basic operation. You cannot access or change information stored in ROM.

S

SCSI: Small Computer System Interface is an industry standard interface for connection of a variety of peripheral devices.

SD card: SD (Secure Digital) card was developed as a non-volatile memory card with a postage stamp size (24X32X2.1 mm). SD card is featuring the function of copyright protection.

SIO: Serial Input/Output. The electronic methodology used in serial data transmission.

soft key: Key combinations that emulate keys on the IBM keyboard, change some configuration options, stop program execution, and access the numeric keypad overlay.

software: The set of programs, procedures and related documentation associated with a computer system. Specifically refers to computer programs that direct and control the computer system's activities. *See also* hardware.

stop bit: One or more bits of a byte that follow the transmitted character or group codes in asynchronous serial communications.

subpixel: Three elements, one red, one green and blue (RGB), that make up a pixel on the color LCD. The computer sets subpixels independently, each may emit a different degree of brightness. See also pixel.

synchronous: Having a constant time interval between successive bits, characters or events.

system disk: A disk that has been formatted with an operating system. For MS-DOS the operating system is contained in two hidden files and the COMMAND.COM file. You can boot a computer using a system disk. Also called an operating system disk.

T

Tablet PC: A fully functional computer that runs Microsoft Windows XP Tablet PC Edition. With a Tablet PC, you can write directly on the screen by using a tablet pen and use the pen to perform mouse functions.

terminal: A typewriter-like keyboard and CRT display screen connected to the computer for data input/output.

TFT: A color LCD technology that applies individual transistors to each pixel enabling fine display control and excellent screen legibility.

TOSHIBA Power Saver: A TOSHIBA utility that lets you set the parameters for various power-saving functions.

TOSHIBA tablet pen: An input device for Tablet PC. User can write the character on a display screen with a digitizing function or tap to select the item appearing on the screen using the tablet pen.

Touch pad: A pointing device integrated into the TOSHIBA computer palm rest.

TTL: Transistor-transistor logic. A logic circuit design that uses switching transistors for gates and storage.

U

Universal Serial Bus: This serial interface lets you communicate with several devices connected in a chain to a single port on the computer.

V

VGA: Video graphics array is an industry standard video adaptor that lets you run any popular software.

volatile memory: Random access memory (RAM) that stores information as long as the computer is connected to a power source.

W

Warm dock/undock: Connecting or disconnecting a device to or from the computer while the computer is suspended.

warm start: Restarting or resetting a computer without turning it off.

window: A portion of the screen that can display its own application or document. Often used to mean a Microsoft Windows window.

Wireless LAN: A short-range radio technology designed to simplify wireless communication with other LAN systems based on Direct Sequence Spread Spectrum radio technology that complies with the IEEE 802.11 Standard (Revision B).

write protection: A method for protecting a diskette (floppy disk) from accidental erasure.

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